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ABSTRACT

This book for students describes Quality Learning or QLearn, a "brain-friendly" learning strategy that involves five types of learning-skill modules. QLearn is described as a "brain-friendly" system of multi-channel learning, designed for secondary, university, adult students and trainees in business and industry. Under the system learners apply five types of learning-skill modules (objectives, resources, micro-learning, macro-learning, and measurements) to a given learning project at a selected or prescribed pace. Part I introduces the five concepts that support QLearn in detail. A section on objectives presents two objective focus techniques. The section on resources offers techniques for utilizing books, audiovisuals, and computer searches. The third section is on micro-learning and explains memory, note-taking and other skills. The fourth section is on macro-learning including graphic techniques, problem solving, teamwork, and reporting. The fifth section covers learning measurement including reviews, tests, and portfolio approaches. Part II presents 16 learning skill modules. Part III shows how the reader can design his/her own system of QLearn. Part IV contrasts "mislearning" with QLearn and serves as an overview of QLearn. Includes information on the author, feedback request, and an index. (Contains 90 references.) (JB)

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LEARN IN BRAIN-FRIENDLY WAYS

RUDOLF E. KLIMES, Ph.D.

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How to Succeed With Quality Learning Skills

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LEARN IN BRAIN-FRIENDLY WAYS:

HOW TO SUCCEED WITH QUALITY LEARNING SKILLS

by

Rudolf E. Klimes, Ph.D.

Dean, School of Lifelong Learning
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LEARNwell RESOURCES

1994

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CONTENTS

PART I. WHAT IS QLearn?..1

1. EXPLORE QLearn..5
2. CONSIDER QUALITY LEARNING PATTERNS..13
3. COMPARE THE PARTS OF YOUR BRAIN..19

PART II. HOW CAN YOU USE THE QLearn SKILLS?..25

1. FOCUS ON OBJECTIVES..29
    1.1 Zero in on A-B Objectives..31
    1.2 Design your L-O Objectives..38

2. USE QLearn RESOURCES..45
    2.1 Employ Book-probes..47
    2.2 Pursue Audiovisual-quests..52
    2.3 Conduct Computer-searches..57

3. PARTICIPATE IN MICRO-LEARNING ACTIVITIES..61
    3.1 Draw Mark-lines..64
    3.2 Ask System-questions..69
    3.3 Take T-notes..75
    3.4 Build Memory-mansions..80

4. CONTRIBUTE TO MACRO-LEARNING PROJECTS..89
    4.1 Chart Box-graphics..91
    4.2 Solve Case-problems..97
    4.3 Share Team-tasks..102
    4.4 Write Theme-reports..110

5. CHECK (and MEASURE) YOUR LEARNING OUTCOMES..115
    5.1 Repeat Step-reviews..117
    5.2 Develop Test-sets..125
    5.3 Collect File-portfolios..132

PART III. HOW CAN YOU DESIGN YOUR QLearn?..137

1. STUDY YOUR LEARNING STYLE..140
2. DISCOVER YOUR LEARNING PATTERNS..145
3. RECALL QLearn PRINCIPLES..150
4. MODEL YOUR QLearn..155
5. PLAN YOUR QLearn SKILLS..161

PART IV. HOW CAN YOU AVOID MISLEARNING?..175

1. REJECT DISTRACTIONS..177
2. KEEP BUILDING QLearn SKILLS..184

RECOMMENDED READING/REFERENCES..191
ABOUT THE AUTHOR..198
FEEDBACK REQUEST..199
INDEX..200

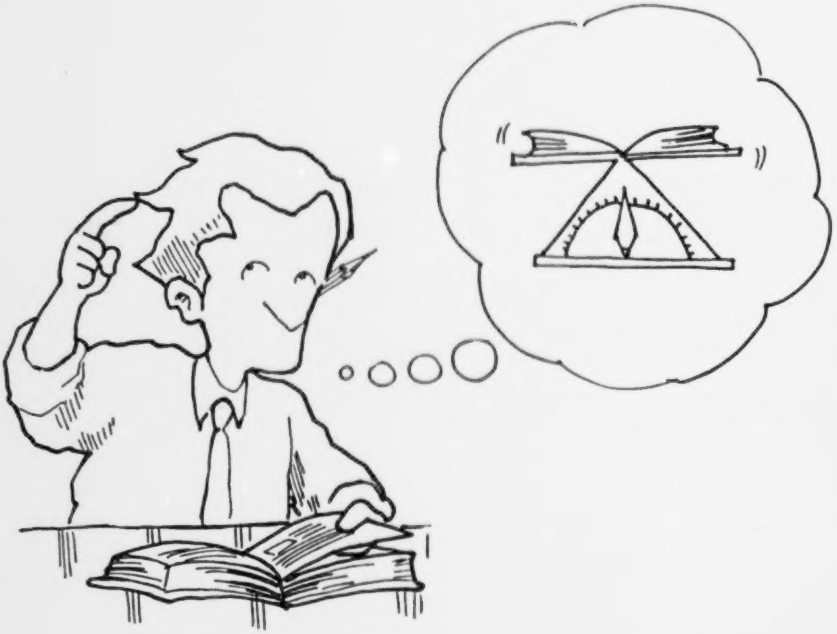
LIST OF TABLES

1. Example of QL5 Skill Plan..28
2. Examples of A-B Objectives.......................................36
3. Examples of Learning Behaviors...................................37
4. Examples of L-O Objectives.......................................42
5. Examples of Basic Reference Books and their Usage................49
6. Examples of Audiovisuals...54
7. Examples of Computer Software....................................60
8. Types of Mark-lines..66
9. Marking of Questions...67
10. Example of Marking Symbols.......................................68
11. Examples of System-questions.....................................71
12. Examples of Lifestyle System-questions...........................72
13. Examples of Word-guides that lead to Main Points.................76
14. Example of T-notes...79
15. Proportion of Information that is Remembered.....................80
16. Examples of Case-problems.......................................101
17. Examples of Team-skills...107
18. Example of Report Outline.......................................114
19. Study Time Management Chart.....................................120
20. QLearn Step-review Worksheet....................................123
21. Example of QLearn Step-review...................................124
22. QLearn Feedback Sheet...130
23. Examples of Materials in Portfolios.............................134
24. Seven Intelligences...144
25. Thinking and Communication......................................146
26. Intelligences and Three Senses..................................147
27. Focused Thinking..148
28. QLearn Cross-skills...159
29. QLearn Skill Plans QL5-QL15.....................................163
30. QLearn Skill Plan Outlines (QL5 - QL5.3)........................165
31. Example of QLearn Skill Plan QL5.1(Science/Mathematics).........166
32. Example of QLearn Skill Plan QL5.2(Practical/Fine Arts).........167
33. Example of QLearn Skill Plan QL5.3 (Social Sciences)............168
34. Pattern for a Passage on the Philosophy of Life.................169
35. Designed QLearning Skill Plan...................................171
36. 105 Modules of Learning Skills..................................172
37. QLearn Scope and Sequence.......................................173
38. QLearn Related Disciplines......................................185
39. Management Areas that can Utilize QLearn........................186
40. Comparison of Mislearning and QLearn............................188

LIST OF FIGURES

1. Symbols for the Five Types of QLearn Modules....................4
2. The 16 Brain-friendly Learning Modules.........................11
3. Estimated Proportion of Adult Mislearners and QLearners.........14
4. The Left and the Right Hemisphere of the Brain.................21
5. Parts of the Triune Brain......................................22
6. The 16 QLearn Skill Modules....................................27
7. Examples of Objective Graphics.................................43
8. Example of Old German Trade Design.............................56
9. The Peg-word Memory System.....................................85
10. The Re-member Framework.......................................87
11. Examples of Box-graphics......................................93
12. Johari Window..105
13. Relationship Mapping Symbols.................................108
14. Example of Relationship Mapping..............................109
15. Plan for Five Types of Brain-friendly Learning Modules.........138
16. Random and Focused Thinking..................................148
17. Brain Characteristics and QLearn Modules.....................154
18. Four Stages of Management Theory.............................156
19. QLearn Neural Network Model..................................157
20. QLearn Branch Model..158
21. A Summary of Mislearning.....................................182
22. Differences in QLearn and Mislearning........................189

PART I. WHAT IS QLearn?



QUALITY LEARNING

You and I are going to visit together for a while as we explore brain-friendly ways of learning. I have been doing research into better ways of learning for many years, and now I want to help you discover what I have learned. So make yourself comfortable, get a pen, and read on.

Whether you find it easy or difficult to learn, the chances are that you would like to learn better. If all learning is easy for you, you will think of this visit as enlightening and may often say, "I have been doing this all along." You also will discover things about learning and your brain that you never knew. Thus you can broaden your learning horizon and enter fields that you had never dreamed of. If on the other hand, learning is a struggle, this visit will help make it less of a battle and more of a pleasure .

Your brain is wired in a different way from my brain. And it has different interconnections between neurons from other brains. When you were a baby, your brain was very soft and plastic. As you grew, it lost some of its plasticity. The brains of some people remain persistently more plastic that the brains of others. The organizations of your emotional and mental facilities of your brain may be limited or rich. Regardless, you can improve the effectiveness and efficiency of your learning to some extent through Quality Learning.

Your brain is a wonderful organ. You cannot see it, you cannot feel it, but you know that there is something between your ears. I know how my fingers move, and why they do what I ask them to do. Neither I nor the smartest scientists can fully explain how the brain works. This is still a mystery. We know how some parts of the brain work, but we have no idea how it all fits together to make me the person I am.

You are a still greater unknown, for I cannot read your thoughts. I do know, however, what input helps the brain work better and what hinders it. The first is a kind of brain-friendly learning I call Quality Learning or QLearn. There are other brain-friendly learning systems, some designed especially for computational and technical areas. But QLearn is so basic that it fits most subjects and competencies. The things that hinder learning I have named mislearning.

It would be easy just to list the principles of brain-friendly learning and ask you to use them in your studies. There is a wide gap between understanding the principles and actual improved learning. This is what our visit is all about. I will discuss the ten principles in detail in Part III but apply them in real-life learning situations in Part II.

They are summarized as follows:

1. Use meta-criteria (to select the best).
2. Learn through multi-sensory experiences (and channels).
3. Learn actively (and responsibly).
4. Associate ideas with other ideas (and build networks).
5. Order your memories (so you can find them again).
6. Integrate your learning (and find patterns).
7. Provide emotional support (and enjoyment).
8. Distinguish between main points and supporting points.
9. Reinforce your learning (through feedback).
10. Repeat evaluations (to check if you met your objective).

Learning is usually measured in grades or academic degrees. You may have a reputation for being smart, and therefore educated. You may have a number of certificates that imply that you spent many years in educational environments. But QLearn is not evaluated that way. For learning is not a certificate. It is the change of attitudes and use of skills to reach set objectives. You may have little formal schooling, but you may be an excellent learner. Or you may have spent years in classrooms, absorbing what was thrown at you, and end up only with a pile of sheepskins.

To me, learning and life are nearly synonymous. As I live, I learn. Learning empowers me to live better. I continually learn to adjust to the people around me. I constantly learn to cope with new problems at work. I regularly learn to improve my communication skills. I am a lifelong learner. "Making mistakes (and occasionally appearing foolish) is the price you pay for learning and improving....Few things are as potentially difficult, frustrating, or frightening as genuine learning, yet nothing is so empowering" (Robinson 1993, 266-7).

Thinking takes place in the brain. It uses input received from the eyes, ears, nose, tongue, fingers and memory, then processes it, and produces thoughts and actions. Figure 1. presents a schematic illustration of the five types of learning-skill modules through which QLearn processes information. A symbol has been selected to signify each of the types of modules. Objectives use circles, resources use squares, micro-learning uses rectangles, macro-learning uses parallelograms, and measurements use triangles. In Figure 1, the schematic symbols that correspond to the ten principles of brain-friendly learning are presented.

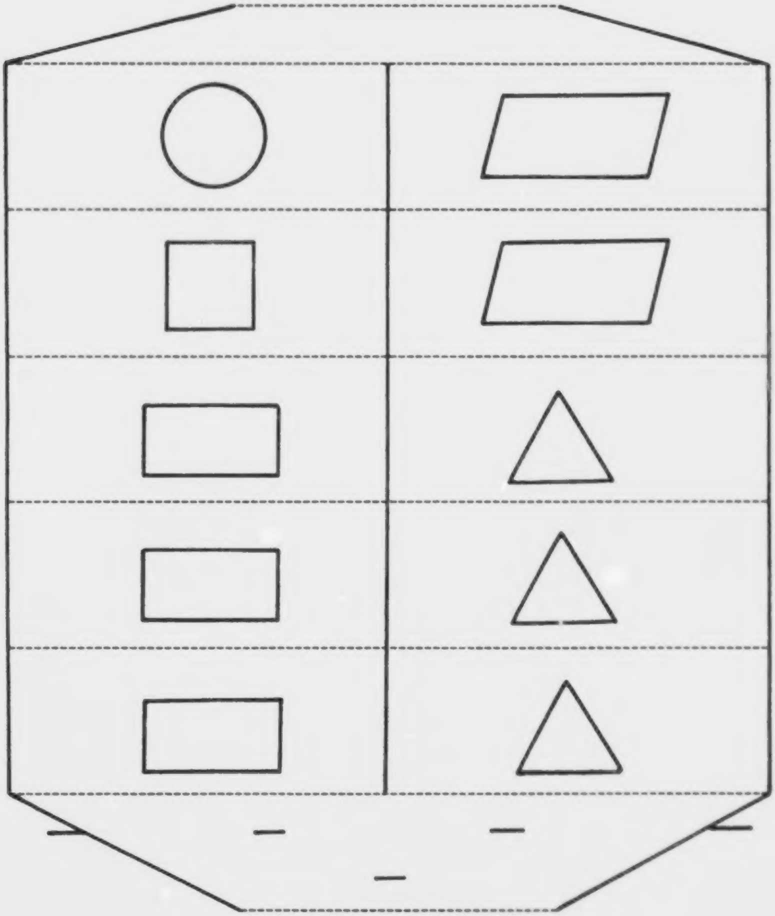


Fig. 1. Symbols for the Five Types of QLearn Modules

1. EXPLORE QLearn.

In just a few pages, I will tell you what this book is all about. I will also define most key words, so that we can understand each other. Rather then prepare a glossary, I present the definitions of key terms in their settings. I follow the order of the four parts of this book, and briefly answer each of the questions that form the headings of the four parts.

Part I deals with the concepts on which QLearn is built. Part II is the body of this book and deals with the 16 learning skill modules. The most basic modules in this book are called QL5 and are presented in Part II, Sections 1.1, 2.1, 3.1, 4.1, and 5.1. Part III helps you to design your own system of QLearn. Part IV contrasts mislearning with QLearn and thus serves as another overview of QLearn.

But first I want to check if there is any possibility that you can improve your learning. You may think that you were born the way you are and that nothing you can do can make you really succeed like some other people.

BRAINWORK

✓

> "In the Minnesota study, 350 pairs of identical twins reared apart... showed that such characteristics as leadership ability, imagination... were largely inherited. On the other hand, the environment the child was raised in seemed to account for a whole host of other traits, including aggression, achievement, orderliness, and social closeness" (Adler 1993, 44).

The above quotation suggests that you can improve your achievements as you improve your environment. You were born with certain characteristics, and these may effect you greatly. But when it comes to achievement, what you do with your brain may be more important than what you inherited. Without doubt, nearly everyone can improve his or her learning.

1.1 WHAT IS QLearn?

QLearn stands for Quality Learning and is one of the brain-friendly systems of multi-channel learning, designed for secondary, university and adult students and trainees in business and industry. It is based on current brain research, efficient learning management and quality assurance of the learning process. The learners are fully responsible for their learning.

Quality Learning may also be defined as a learning system in which learners or trainees apply five types of learning-skill modules to a given process, at a selected or prescribed pace, with or without the aid of an instructor. The five types of learning-skill modules deal with objectives, resources, micro-learning, macro-learning, and measurements.

QL5 refers to the five Quality Learning modules that are basic and that are suggested for learners who do not design their own learning. QL5 includes modules 1.1, 2.1, 3.1, 4.1, and 5.1 in Part II of this book.

Learning the Brain-friendly Way is the change of attitude and/or behavior of learners that is designed to take advantage of the way the brain functions. It is brain-friendly in the sense that it is more effective and efficient than most other learning and thus helps produce superior learning outcomes. It is not necessarily easier than other learning, just more productive. Brain-friendly learning provides a basic mental structure for learning in most content areas. Learning in some fields, especially mathematics and science may require other mental structures in addition to those presented in this book (Begley 1993b, 46).

Multi-channel learning is built on the premise that learning with multiple intelligences uses a variety of sense-inputs, resources, memories, and actions that result in numerous learning outcomes.

Education deals with "instruction that emphasizes far-transfer learning objectives; traditional knowledge-based instruction that is not tied to a specific job, as opposed to training" (Piskurich 1993, 327).

Self-directed Learning "is a training design in which trainees master packages of predetermined material at their own pace, without the aid of an instructor" (Piskurich 1993, 4).

Trainees are learners in business and industrial settings. In schools and universities, the same individuals may be called students or learners. School learning is usually general and is designed to lead to a certificate or degree. Training, on the other hand, is intended to prepare the trainee for a specific job competency.

Learning Outcomes are the visible and observable changes in attitude or behavior that are the results of learning. Since much learning involves a change of behavior, the difference between the observed beginning behavior and the end-result behavior is the learning outcome. It is the product that is left over after learning, that shows that something has been learned. In mislearning, there are few learning outcomes.

1.2 HOW CAN YOU USE THE QLearn SKILLS?

QLearn Skills are the competencies involved in the use of learning objectives, learning resources, micro-learning activities, macro-learning projects, and learning outcome measurements. There are 16 QLearn skill modules.

QLearn Cross-skills refers to the learning skills that are part of many learning modules. In QLearn, the cross-skills are questioning, using audio-visuals and graphics, and problem-solving.

OBJECTIVES

Learning Objectives are intent statements that set the direction for learning and define the desired learning outcome. The chapter title, "Explore QLearn," and all other chapter titles, are examples of A-B objectives.

A-B Objectives are short intent statements that deal with attitudinal (A), behavioral (B), or A-B changes. A-B Objectives are often sufficient in most learning situations. (Chapter 1.1)

L-O Objectives are expansions of A-B Objectives that specify intended learning (L) outcomes (O). Training situations nearly always call for L-O Objectives. An example is: "By January 5, 199X, Joe Doe, .pa
given the book Learn in Brain-friendly Ways, and 100 test items, will calculate the test difficulty index correctly 99% of the time." (Chapter 1.2)

RESOURCES

Learning Resources are materials designed to be helpful in the learning process by storing data and information. Books, audiovisuals and computer programs are three types of common learning resources.

Book-probes deal with the search and use of printed and written materials needed in learning. (Chapter 2.1)

Audiovisual-quests aim at locating and utilizing media and audiovisual aids required in learning. (Chapter 2.2)

Computer-searches are designed to produce information and data from computer files and data-bases. (Chapter 2.3)

MICRO-LEARNING

Micro-learning Activities are processes in which learners deal with small and detailed units of intake. They are often analytical in nature. An example of this activity is underlining, where the learner highlights the important ideas that make up a chapter. Learning takes place on many levels, and the learning that starts with the small parts of a unit is micro-learning. It is closely related to factual learning.

Mark-lines are the markings in books and other writings that help learners note the key words and other characteristics of a text. They include underlining, questions, symbols, and comments. (Chapter 3.1)

System-questions are special interrogatory statements designed to help learners analyze texts, topics or problems. (Chapter 3.2)

T-notes deal with the writing of systematic observations about lectures or writings. They are written on pages that are divided by large T's, with the key words on the left side of the "T". T-notes are a type of split-page notes. (Chapter 3.3)

Memory-mansions are systems of brain-friendly memorization that facilitate learning. (Chapter 3.4)

MACRO-LEARNING

Macro-learning Projects are learning modules that pull together the various learned parts into new units. They deal with the large picture. Most student reports are macro-learning projects. Usually, a number of micro-learning activities are first required to prepare for efficient macro-learning.

Box-graphics are learner-produced visuals that aid in learning and lead toward learning outcomes. The charts and illustrations in this book are box-graphics. (Chapter 4.1)

Case-problems deal with difficulties that require solving. In this module, learners follow prescribed problem-solving steps. (Chapter 4.2)

Team-tasks are activities or projects undertaken jointly by two or more learners. Your discussion with a friend of what you have read so far would be a team-task. (Chapter 4.3)

Theme-reports are learner-written products that deal with given topics, problems or questions. (Chapter 4.4)

MEASUREMENTS

Learning Outcome Measures establish if the desired learning objectives were reached or not. They constitute the quality assurance component of the QLearn system. Portfolios are examples of outcome measures.

Step-reviews are repeated rehearsals of what has been learned. They are planned to maximize long-time learning. (Chapter 5.1)

Test-sets use evaluation instruments to check to what extend the proposed objectives were achieved. They also deal with effective methods of taking tests. (Chapter 5.2)

File-portfolios are designed collections of learning outcomes that show that the learner is competent to produce the displayed materials. (Chapter 5.3)

1.3 HOW CAN YOU DESIGN LEARNING PLANS?

A Learning Plan is an outline of anticipated learning. It consists of the proposed learning-skill modules that are appropriate for the individual, the subject, and the circumstances. Thus, different learning plans may be required for different individuals, different subjects, and different circumstances.

Effectiveness is a measure that determines whether the learning outcome achieved its objective.

Efficiency measures whether learning was completed economically in regards to time and effort.

Multiple Intelligences refers to the seven specialized fields of mental activities proposed by Gardner (1983). There are linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, intrapersonal and interpersonal intelligences.

1.4 HOW CAN YOU AVOID MISLEARNING?

Mislearning is that learning where the student does not master at least 60% of the planned competency. In many situations, mastery or near mastery is required. In training situations, the acceptable level may be 99% ($p = 0.01$), 99.9% ($p = 0.001$), or higher. The given percentages do not indicate a cut-off of a test-score, but the actual competency. The p-levels indicate the possibility of mistakes in given situations. Mislearning is presented in this volume as the opposite of QLearn. Mislearning is avoided by designing and implementing efficient learning programs.

Distractions are objects, people, ideas and events that guide the learning process away from the learning objectives. Distractions lead to mislearning.

Not all learning-skill modules will be used at all times. You may design your learning and select the modules that fit you. Figure 2 presents a chart of the 16 modules.

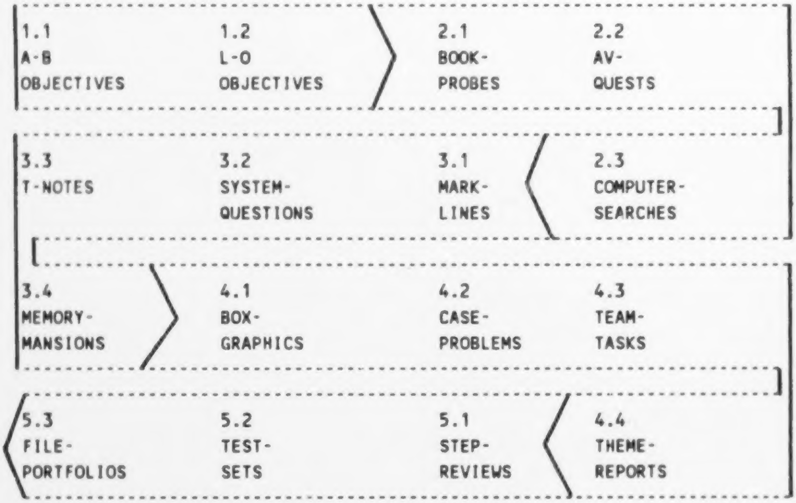

1.1 A-B OBJECTIVES
1.2 L-O OBJECTIVES
2.1 BOOK-PROBES
2.2 AV-QUESTS
2.3 COMPUTER-SEARCHES
3.1 MARK-LINES
3.2 SYSTEM-QUESTIONS
3.3 T-NOTES
3.4 MEMORY-MANSIONS
4.1 BOX-GRAPHICS
4.2 CASE-PROBLEMS
4.3 TEAM-TASKS
4.4 THEME-REPORTS
5.1 STEP-REVIEWS
5.2 TEST-SETS
5.3 FILE-PORTFOLIOS

Fig. 2. The 16 Brain-friendly Learning-skill Modules

As I wrote this book, I placed one part after the other in a linear way. But you may go through the book as you see fit. You can learn chapter by chapter. Or if you get frustrated by concepts, you may start with Part II and leave Part I for the end. Or you can start with avoiding mislearning in Part IV and work your way back.

LEARNING CHALLENGES

1. Select a question that especially interests you and that you would like to study in depth. If possible, select a question that you can deal with as you progress through this books.
2. Write out the selected question.
3. Develop and record subordinate questions to the selected question that will help you define more clearly your interests.

2. CONSIDER QUALITY LEARNING PATTERNS.

"No one can learn for you any more than someone can eat for you" (Gross 1991, 10). Also, nobody can make you learn. You are taking your first free step into the Land of QLearn. You are leaving the Land of Mislearn behind you. There you were miserable, trying to learn with weights on your ankles, chains on your hands, blinkers over your eyes, and all that noise in your ears.

Before you learn, you think. QLearn is, in part, based on critical thinking. Paul presents the problem, a definition of critical thinking, and the results of responsible thinking. "Everybody thinks; it is our nature to do so. Much of our thinking, left to itself, is biased, distorted, partial, uninformed, or down-right prejudiced....Shoddy thinking is costly; both in money and in quality of life..." Paul 1993, 7).

Critical thinking may be defined as "that mode of thinking -- about any subject, content or problem -- in which the thinker improves the quality of his or her thinking by skillfully taking charge of the structures inherent in thinking and imposing intelligent standards on them..." (Paul 1993, 7).

Critical thinking "is self-directed, self-disciplined, self-monitored, self-corrective thinking.... A well-cultivated critical thinker raises vital questions and problems,... assesses relevant information, comes to well-reasoned conclusions... thinks with an open mind... and communicates effectively" (Paul 1993, 7).

BRAINWORK

"The young man who has drunk for the first time from that spring is as happy as if he had found a treasure of wisdom; he is positively enraptured. He will pick up any discourse, draw all its ideas together to make them into one, then take them apart, and pull them to pieces. He will puzzle first himself, then also others, badger whoever comes near him, young and old..."(Plato in Czikszentmihalyi 1990, 142).

Many treasures of wisdom go undiscovered. You may be poor, but hidden near you may be the secret for your success. If you seek wisdom with all your heart, you will find it. So look around, and keep reading.

2.1 RECOGNIZE THE PROBLEM.

About 80 percent of learners fail to learn effectively. This is an overall general estimate. You may or may not be in that group. If you are, you spend much time and effort studying, but reap very limited results from your learning. You are then not skilled in meeting your needs or those of the larger society around you. You are dependent on others for things that you should be able to easily provide for yourself. You do not continue your education because you have not caught the joy of learning. You may be under the illusion that you are learning, but lack the needed skills to excel in your field. But you may also be one of the 20 percent that learns effectively.

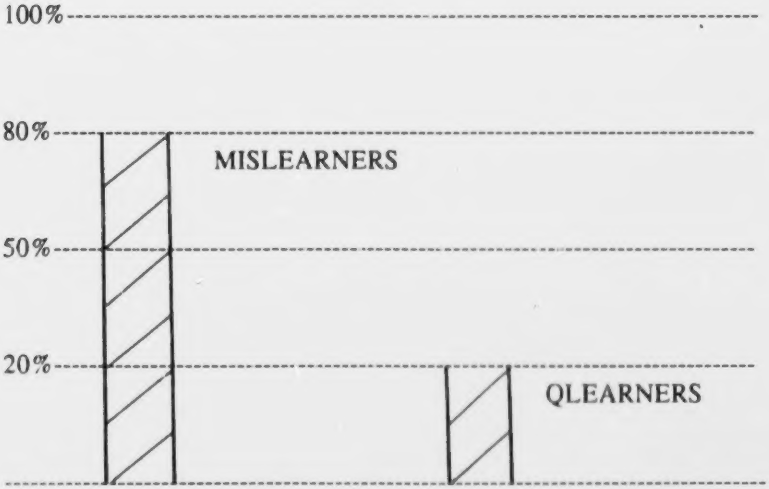


Fig. 3. Estimated Proportion of Adult Mislearners to QLearners

Many learners cannot fulfill their plans. Most youths plan for a filling profession or trade, but end up just earning a living. They lack the learning skills and determination to make their plans work. Or they get sidetracked into something that holds little long-term satisfaction for them. They are not creative enough to adapt to changing conditions to reach their objectives. Their education is mainly left-brained and mechanical. There is often no connection between their learning and the fulfillment of their life-plans.

Many learners do not live up to their potential. Only a few people use anything close to their potential. You have talents, but most of your talents go unrecognized and remain under-developed. You get into a rut of mediocrity and do not advance. You fear failure and thus refuse to risk new explorations.

Many learners are bored by education. For you, education as it is presented today, may be boring. Similar content is repeated over and over again in nearly the same way. Much of the learning has little immediate relevance for you. The topics do not motivate you, and the objectives are unclear. You study mainly for examinations. The pieces of your education do not fit together and there are wide gaps in your store of knowledge. "...most schools are organizationally and culturally antagonistic to thinking-centered learning" (Perkins 1993, 85).

I am writing as if you are an average learner. I do not mean to offend you. I realize that you, the reader, may be an effective professor or a very successful learner. In that case, I present my apologies.

2.2 ACCEPT THE OBJECTIVES OF THE BOOK.

The target audience of this book is the student/trainee. It is for you, an adult, secondary school, or university student, or a business or industry trainee, who wants to improve his learning. It is for individuals with normal or high verbal intelligence. Others, with low verbal intelligence, learning disabilities (such as dyslexia), or emotional problems (such as attention deficit disorders), may also benefit from this book. But they may require a tutor. This book is also for people who help other people learn, namely teachers, professors, trainers and training material developers. "NOBODY CAN TEACH YOU AS

WELL AS YOU CAN TEACH YOURSELF. Your success is your responsibility, not your teachers' and not your parents'" (Robinson 1993, 265, 268).

The objectives of this book are to help you gain three broad areas of skills.

* 1. Learn to learn. Called meta-learning, learning to learn provides the basic skills to deal with most learning situations. As a generic skill, it is just as useful as food services, or transportation. Nobody can get along without the ability to fix a simple lunch or to get from one place to another. Learning-to-learn skills deal both with the positive attitudes toward desired changes and the skills needed to bring about these changes. Information becomes out of date in a short time. Many specialized skills learned 30 years ago are no longer needed. Each category has its own requirements, but QLearn skills hold true nearly all the time for most situations.

* 2. Learn to produce. You can apply your learning-to-learn skills to your chosen areas or topics. You use learning skills that help you improve the learning of subject matter in schools and in training and personal settings. QLearn is flexible so that it meets the needs of the learner, the situation, and the content. It helps meet your objectives. QLearn results in a change of attitude or behavior according to valid quality criteria and is efficient in regard to time, effort, and money. Nearly any normal adult can learn word processing in two years, but only QLearners can learn it really well in a few weeks.

* 3. Learn to live (and reach your potential). You can also apply your learning-to-learn skills to your general lifestyle and your way of living. QLearn helps you discover and use your various talents. You may be limited in one type of intelligence, but highly advanced in another . QLearn fosters your use of all your areas of strengths, not just the ones that help you earn a living. It broadens you with attitudes and skills that help make you the person you were meant to be. By using your unique combination of intelligences, you can reach your objectives.

2.3 KNOW THE APPROACH OF THE BOOK.

I wrote this book, in the main, as a conversation between two learners, you and me. Or you may call me a trainer and yourself a trainee. Some parts of this book, by their very nature, are descriptive and do not lend themselves to personalizing. I made every effort to use QLearn principles in writing this book to make it easier for you to benefit from the content. Some of these features are:

- Outlines are presented on three levels.
- Titles are written as objectives.
- Lists are presented as steps of never more than 7 items.
- Information is presented as main and support points
- Graphics and tables invite thought interaction.
- Examples help active learning.
- Learning Challenges provide for feedback.

This book, like many other books that deal with learning-to-learn, was written on the 6th grade reading-level (Flesch-Kincaid). It has a reading ease score of 72 (Flesch), an average sentence length of 10 words, and an average word length of 1.47 syllables. There are about 36,000 words in this book and thus, even at 200 words per minute, it can be read in about three hours. It will take much more time when readers think about what is presented and complete all the assignments.

This volume presents Quality Learning through a maximum of 16 learning skill modules. There may be over 300 learning skill modules, and some of them are listed at the end of Part III. Remember that learning is complex. But it is sometimes improved even by just one action. In its simplest form, QLearn consists of only five learning skill modules (modules 1.1, 2.1, 3.1, 4.1, and 5.1 in Part II). As you adapt the QLearn system to yourself, your situation, and your needs, you will notice improvements.

2.4 START FROM THE BOTTOM UP.

Maximize learning. In presenting QLearn, I am continuously conscious that I am also trying to help prevent mislearning. In the same breath, I am presenting QLearn as your responsibility. I worked most of my life to change education from an administrative perspective. That did not work so well. So now I am presenting a plan to change education from the bottom up, that is from the learner's point of view. Teach yourself.

Minimize mislearning. It seems this statement should be unnecessary. But it is needed because many teachers lecture and talk while their students think about problems or dream about their dates. I, as a teacher, have the duty to create an environment that will maximize student learning and minimize mislearning. And very few teachers are good at that. Recently, I talked to a professor who claimed that 100% of his students learn well. His students told me otherwise. While he is entertaining, he is no more effective than most teachers. That is, about 20% of his students learn well.

Enjoy learning. You live only once. It is a shame to spend the best part of your life in a seat listening to boring monologues. You have to see beyond the ordinary, and make your learning what you want it to be. That may be difficult at times, but I never said that it would be easy. If you can construct your learning design, you can learn, despite the quality or interest-level of those around you. For at its best, learning is exciting and fun. It is the exploration of the unknown, the discovery of the mysteries that surround us. In Part III on mislearning, I talk about the emotional aspects of learning. You really cannot QLearn without enjoyment.

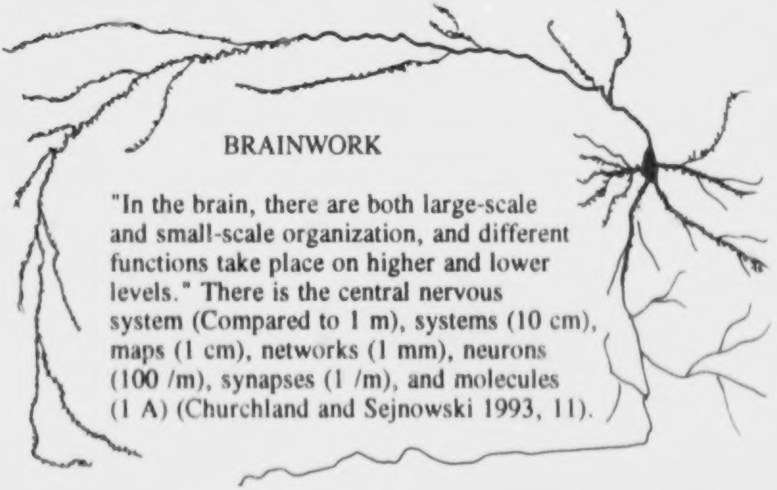
LEARNING CHALLENGER

Consider the way you learn. In paragraphs of about five sentences each, answer these questions:

1. As far as learning is concerned, what is your potential?
2. In your learning, where were your greatest successes?
3. Why did you succeed in some of your learning?
4. In your learning, where were your greatest failures?
5. What do you think caused these failures?

3. COMPARE THE PARTS OF YOUR BRAIN.

Sometimes I wish I had two brains. There is so much to learn. And really, I do have two brains. Amazingly, people have functioned quite well with only half a brain. I know so little about my brain. Yet the little I know can help me learn better.



BRAINWORK

"In the brain, there are both large-scale and small-scale organization, and different functions take place on higher and lower levels." There is the central nervous system (Compared to 1 m), systems (10 cm), maps (1 cm), networks (1 mm), neurons (100 /m), synapses (1 /m), and molecules (1 A) (Churchland and Sejnowski 1993, 11).

The brain can be viewed from many viewpoints. To use brain-friendly learning, you do not have to specialize in the study of the brain. A detailed description of the brain is beyond the scope of this book. Only what is absolutely necessary for Quality Learning is presented here. Yet it is well to have a general understanding of the parts of the brain, and how the different parts interact. Of the organs in your body, the brain is and remains one of the greatest mysteries. You can know enough to learn to use your brain in an effective way.

3.1 CONSIDER YOUR NEURAL NETWORKS.

The brain is a complex, three-pound organ inside the cranium or skull where most of our memorizing, thinking, and learning take place. It contains about 100 billion neurons, each of which has some

1,000 synapses (finger-like extensions) to connect with other neurons. Most activities take place along neural networks that process electrical impulses. A brain cell or neuron must make connections with other neurons for memorization and learning to take place. This is fostered by some environments and conditions, and hindered by others. Even before birth, much of your development centers in your brain. "Of the 100,000 or so genes contained in your chromosomes, half may be involved in the workings of the brain" (Cowley 1993, 45).

Learning seems to depend much more on neural efficiency, and the organization of the dendritic branches in the brain, than on neural effort. There are some indications that high-energy brain usage is harmful to effective learning. Relaxed attentiveness seems the best climate for learning.

Most people use about 10% of their brain power. With learning, the brain changes and grows. Thus the IQ may be raised.

Your neural networks do not naturally function logically. For example, you drop a bullet 3 feet, and at the same time shoot another one across a football field. Which hits the ground first? Aristotle and Galileo thought that it should be the dropped bullet. Do you agree? Wrong. Both hit at the same time. Piaget stated that we acquire formal operational thought by the age of 14. Alan Cromer, a physicist, in his book Uncommon Sense: The Heretical Nature of Science, disagrees: "Science and objective thinking are unnatural activities. The mind was not designed to study physics...We no longer believe that our students come to us with the laws of physics buried in their heads...They [classes] must fill in the mental structures needed to understand science" (Begley 1993b, 46). That is, in part, why QLearn is so relevant. Thus brain-friendly learning is not natural learning, it is designed learning.

3.2 UNDERSTAND YOUR ROOT BRAIN.

Most nerves lead into the brain through the spinal cord. These nerves connect to the center of the brain, which is called the root brain. This part regulates instincts. Thus a person who touches a hot stove will pull back immediately, almost without thinking about it. The root brain controls this reaction.

3.3 KNOW YOUR LIMBIC SYSTEM.

Around the root brain sits the limbic system or midbrain, where many basic mental functions are controlled. One part tells the brain where and how to store information. It also directs breathing, heartbeat and similar functions. Interestingly, this is also where the brain deals with emotions. Since memory-direction and emotions are in the same section of the brain, emotions may have a much greater effect on learning than usually thought.

3.4 APPRECIATE YOUR GRAY MATTER.

You think and learn primarily with your gray matter. Your gray matter, the neocortex, is that thin walnut-like covering that receives the input from the five senses, stores it in memory, and when needed, processes it in thinking. "It processes billions of operations a second.... So densely packed is the brain that a sample no larger than a grain of rice contains one million neurons, 20 miles of axon -- or the extension cords of nerve cells -- and 10 billion synapses, calculates California neurobiologist Charles Stevens, Ph.D." (Livermore 1992, 42). When called upon, the neocortex uses new inputs and old memories to come up with new thoughts and learning. As shown in figure 4, the neocortex is divided into a left half and a right half.

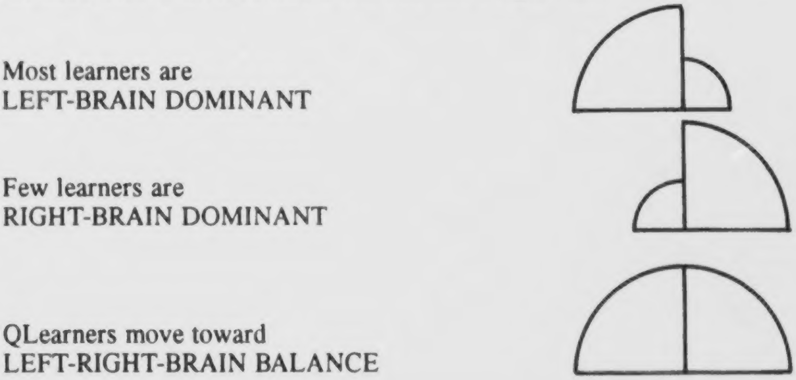


Fig. 4. The Left and the Right Hemispheres of the Brain

Your left-brain deals primarily with verbal information. The left hemisphere of the neocortex is well suited for sequential, digital, logical and analytical learning (Springer and Deutch 1989, 284). This type of learning forms the basis of most academic learning. Thus a majority of people most likely are left-brain learners.

Your right brain processes mainly non-verbal thinking. The right hemisphere of your gray matter is especially adapted to learn in visual, spatial, simultaneous, analogical, and synthetic ways (Springer and Deutch 1989, 284). Right-brain learning may be generally neglected. To maximize learning, QLearn places a greater emphasis on this type of learning than is usually done. Macro-learning fosters balanced learning and the appropriate use of both hemispheres. Many artists and planners are right-brain learners. The corpus callosum connects the left and right sides of the brain. The parts of the brain are presented in Figure 5.

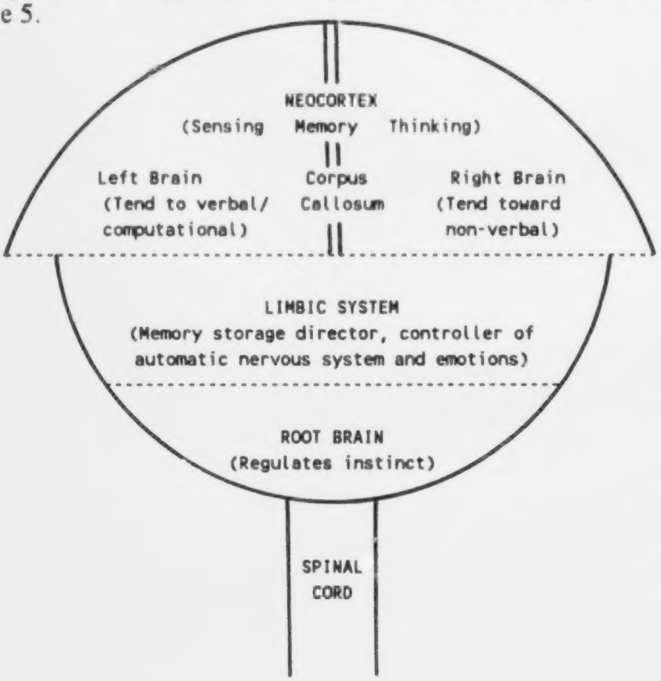

NEOCORTEX
(Sensing Memory Thinking)
Left Brain
(Tend to verbal/ computational)
Corpus Callosum
Right Brain
(Tend toward non-verbal)
LIMBIC SYSTEM
(Memory storage director, controller of automatic nervous system and emotions)
ROOT BRAIN
(Regulates instinct)
SPINAL CORD

Fig. 5. Parts of the Triune Brain (based on Gross 1991, 23)

LEARNING CHALLENGES

Sit in your room and face the wall. Relax completely.

1. For ten minutes, write down everything you think about.
2. Analyze what you have written and note any patterns.

PART II. HOW CAN YOU USE YOUR QLearn SKILLS?

QLearn Skills

In this part, I present five types of QLearn skills that form the QLearn learning system. The five types deal with objectives, resources, micro-learning, macro-learning and measurements. If you want to get into this part very fast and just learn the basics first, I invite you to study QL5, which consists of the following learning skill modules:

1.1 A-B Objectives
2.1 Book-probes
3.1 Mark-lines
4.1 Box-graphics
5.1 Step-reviews

At this time I would like to outline how this part relates to the three objectives of the book that I presented earlier.

Learn to learn. If your main purpose in studying this book is to gain generic learning-to-learn skills, you need to go through this part in great detail. Make sure that you take on the learning challenges at the end of each section. And spend sufficient time with the step-reviews of each section.

Learn to produce. Your main interest in this book may be to learn to produce certain types of apple pies or other products. If it is a rather simple product, QL5 as outlined above, may suffice. Let me explain with an example:

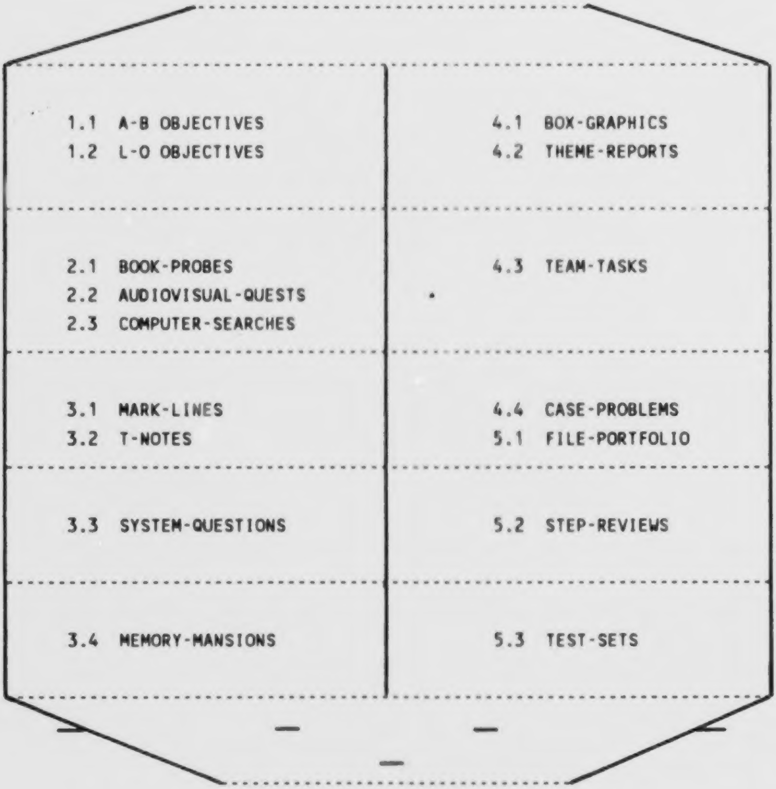
1.1 A-B Objective: To produce 10 apple pies of type X.
2.1 Book-probes: Find method and recipe books.
3.1 Mark-lines: Read and mark up the recipe books.
4.1 Box-graphics: Draw flow-charts of the pie-making process.
5.1 Step-review: Review and check the process.

I would like to present one more simple QL5 structure of the study of a selected paragraph. Other examples of QL5 and all the other learning skill modules are presented in Part III.

1.1 A-B Objective: The objective becomes the title.
2.1 Book-probes: The paragraph under study.
3.1 Mark-lines: Underlining/marking the key words.
4.1 Box-graphics: Drawing charts of the paragraph content.
5.1 Step-reviews: Memorizing the paragraph.

If the product is complex, you will need additional learning skill modules. In this part, 16 modules are presented. Part III. presents guidelines for selecting the needed modules.

Learn to live. You may not want to acquire a particular skill, but to improve the whole quality of your life and reach your potentials. This may be in the area of your family, health, work or lifestyle. In that case, you most likely will need all the learning skill modules presented in this book. Figure 9 presets the 16 modules. Table 2 gives an example of QL5. Other examples will be presented in Part III.



1.1 A-B OBJECTIVES 1.2 L-O OBJECTIVES	4.1 BOX-GRAPHICS 4.2 THEME-REPORTS
2.1 BOOK-PROBES 2.2 AUDIOVISUAL-QUESTS 2.3 COMPUTER-SEARCHES	4.3 TEAM-TASKS
3.1 MARK-LINES 3.2 T-NOTES	4.4 CASE-PROBLEMS 5.1 FILE-PORTFOLIO
3.3 SYSTEM-QUESTIONS	5.2 STEP-REVIEWS
3.4 MEMORY-MANSIONS	5.3 TEST-SETS

Fig. 6. The 16 QLearn Skill Modules

Table 1. Example of QL5 Skill Plan (Language/ Philosophy)

1. OBJECTIVES	OBJECTIVE	BOOK-PROBE
1.1		Read and explain:
A-B Objectives Motivation Attitude-Beh. Action Outcomes	A: To value self-learning. B: To explain QLearn basics.	Bibliography at end of this book. Content of this book. Key-words.

2. RESOURCES

2.1
Book-Probes
Categories
References
Outlines
Documentation

3. MICRO-LEARN

3.1
Mark-Lines
Underlining
Questioning
Symbols
Comments

Micro-learning: NOTE-LINES
AN INVITATION (Klimes, 1993)

Now millions sit passively in classrooms because the law requires their attendance, or because they want an important piece of paper. They are daily exposed to long monologues. They hope that their ears and eyes will absorb enough to pass the upcoming test with good grades. To some, education is a burdensome punishment that they have to endure to respect themselves.

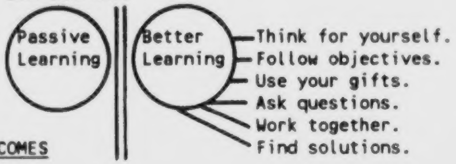
But others seek better ways of living, as starving men search for food and as drowning men gasp for air.

They think for themselves, they follow noble objectives, and they use their gifts with imagination. They view obstacles from various perspectives, they ask questions, and they work together to find solutions. To them, learning is the joyous discovery of the roads that lead upward.
Come and join them.

4. MACRO- LEARN

4.1
Box-Graphics
Select Boxes
Connecting
Editing
Explaining

BOX-GRAPHICS

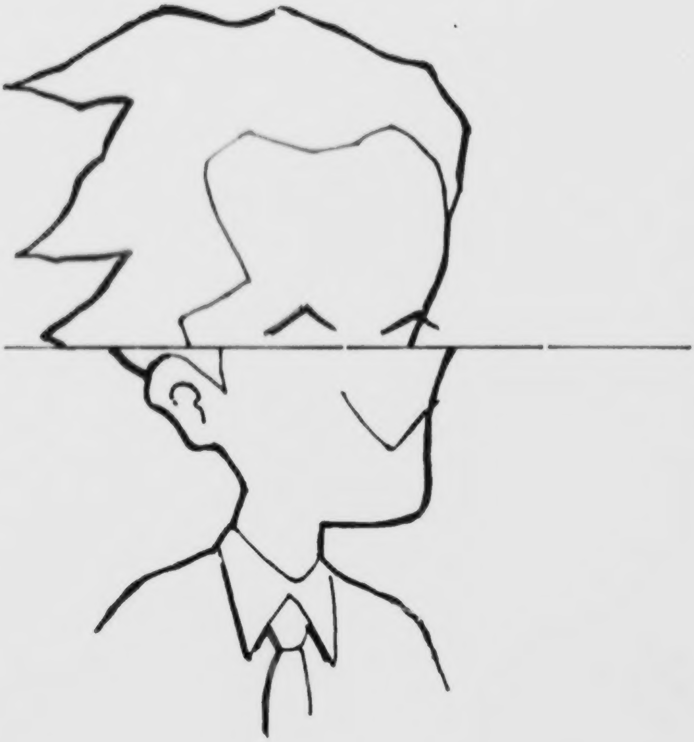


5. LEARNING OUTCOMES

5.1
Step-Reviews
Checklist
Timing
Summaries
Rehearsals

STEP-REVIEW
1. Checklists:
   Key-words with definitions, outlines, main points, T-Notes.
2. Time: daily 5 (minutes) for 2 weeks, then weekly 10 (minutes) for 2 months.
3. Make a poster-summary and post it.
4. Check if it works in real life as you study 3 topics.

1. FOCUS ON OBJECTIVES.



1. OBJECTIVES

You have been very patient. What went before was, in a way, all preliminary. It was very important to set the stage for the QLearn skills, but if you stop with Part I, your learning may improve less than desired. Part II deals with the specific things you can do to improve learning.

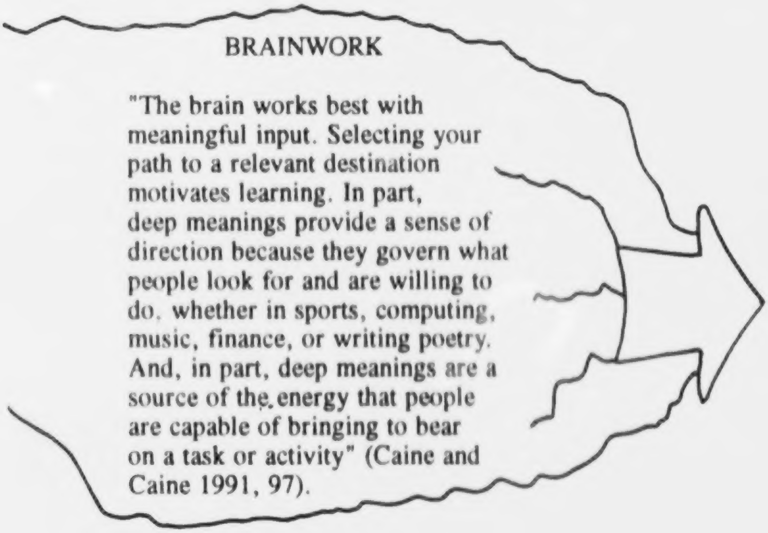
You might find it strange that I should spend so much time on objectives. You may say, "I know what I want." But do you really? You have a general idea of where you want to end up. That is often not good enough. Read on.

I used to think of learning only as a process. Learning was something that I did, and the doing was important. Then I found out that learning in itself was not the result I was seeking. I once took an advanced course in ethics and received an "F." Not because I did not study. Not because I did not learn anything. I already had a Master's degree in ethics. I received an "F" because I wrote the project paper in a way unacceptable to my professor. In setting my grade, only the learning outcome, as evaluated through the project, was important. Most of the time, the outcome is more important than the learning itself. If after all your study you cannot multiply 312 by 30 in your head, you do not know arithmetic well. By the way, is the answer 934 or 9,360? Both the learning and the outcome of learning matter.

I want to share a secret with you. There is a type of learning where the result is in the process itself. Csikszentmihalyi (1990) calls that experience "flow' and the study of it the "psychology of optimal experience". I do not climb the mountain behind our house in Seoul, Korea, to reach the top, but to enjoy the beauty of the scenery and the rushing of the blood in my arteries. It feels great. Thus, my objective is the enjoyment of nature and exercise. The beauty of nature uplifts me. The exercise prevents my body from atrophying further, but it may take years to discover the effectiveness of the exercise. Even then, I can never be sure that it was my exercise that prevented sickness, or my genes, or my diet. As I hike, I aim for the stars, knowing that I will not reach them tomorrow. I enjoy the flow.

1.1 ZERO IN ON A-B OBJECTIVES.

The writing of learner-centered objectives does not have to be difficult. In their simplest form, objectives are very short and to the point. Nearly all titles and headings of this book are A-B Objectives. I am asking you to zero in on the objectives like a marksman on a target. That takes total concentration and commitment to the task.



BRAINWORK

"The brain works best with meaningful input. Selecting your path to a relevant destination motivates learning. In part, deep meanings provide a sense of direction because they govern what people look for and are willing to do, whether in sports, computing, music, finance, or writing poetry. And, in part, deep meanings are a source of the energy that people are capable of bringing to bear on a task or activity" (Caine and Caine 1991, 97).

You can choose the path that your life takes. You can list objectives that will help you get there. These objectives are not just a few words, they are a powerful aid to your learning. The more meaningful they are, the higher will be your motivation to reach your objectives.

While there are many types of intent statements, I chose to use the term objective because thus I can move easily from one type of objective to the other. Other authors use intent statements such as missions, purposes, aims, and goals. I prefer the term objective. A-B Objectives are simple and basic intent statements, while L-O Objectives are just enlarged A-B objectives that help with learning and evaluation designs.

1.11 UNDERSTAND OBJECTIVES.

Consider the type of objective. In QLearn there are attitudinal (A) and behavioral (B) objectives. Hence the title A-B Objectives. Attitudinal objectives deal with feelings, emotions, beliefs and dispositions (affects). Behavioral objectives concern themselves with mental (cognitive) and physical processes. Some learning skills require A-Objectives or B-Objectives, others call for A-B Objectives. In many learning situations, attitudinal changes create a climate for new behaviors that then result in learning outcomes. In production situations, attitudinal changes alone are not enough.

Motivate by objectives. One morning I got up early for a very specific purpose, to write part of this book. The thought of writing moved me. I was motivated by my objective. My objective was simply to write part of this book. By evening I had accomplished my objective. As I looked over my computer files, I felt good. This book was a bit closer to being finished, and that motivated me throughout the day. Objectives do motivate. Sometimes I can select my objectives, and at other times someone hands me an assignment to complete. As long as I accept the objectives and make them my very own, they push me along the path until they are completed. It is not always that simple, but right now, that is the way I see it. That is, in part, why I need an objective to get up in the morning. Without it, I am tempted to lull the day away or just go blindly through my daily routines.

Choose long-term career and life objectives. You know that there are many things that you cannot complete in a day. Or even in a month or a year. So it is helpful to develop long-term, or even life objectives. Because the objectives are so far ahead, you will need mileposts along the way, subordinate objectives to help you see your progress. To follow objectives takes self-discipline, and an ability to delay gratification. This is hard on the "now" generation, which wants everything instantly. It is a cliche to say that Rome was not built in a day, but it is also true. Neither will your personhood be built in one day. Objectives are like the stars by which you steer your boat. The dimmer the stars, the more difficult it is to steer by them. But do not give up. Were it not for the stars, you would not know your direction.

1.12 CHANGE ATTITUDES AND BEHAVIORS.

Place a verb in the objective. You will find that every objective requires an action word, or a verb. You move toward an objective, you do not just sit there. You basically ask yourself: "What will I do?" The answer is part of the objective, namely, I will write, or I will sing, or whatever. For example, I am at an airport and I want to buy a book that I can leisurely read on my trip. What shall I buy? Will it be a self-help book, a mystery novel, a book of poems, a science fiction work, or a travelogue? My attitude toward leisure reading will decide the selection. My attitude verb in this objective will be "to select". And I may say: "Ah, I will select a relaxing travelogue." That is my objective. Whether I find it or not, that is another matter. More examples are given in Table 3.

Change your attitude (A). Very simply speaking, you may aim at objectives that are inside you, or at objectives that are outside you. A change of attitude can be the objective that is inside you. Attitudes are ways of looking at the world around you. At the most basic level, you have either a positive or a negative attitude toward something or toward a person. When you do not like someone, you may say that person "turns me off." What you are really saying is that you have a negative attitude toward that individual. Further, your emotions, feelings and moods also express your attitude. Sometimes you may just want to feel more positive toward a certain teacher to be able to learn better from him. Your goal then is a change of attitude. The lecturer who wants you to be conscious about conservation of resources wants you to have a very positive attitude toward saving the world's resources. His objective is a change in your attitude. I try to keep a constant positive A-Objective toward learning.

Change your behavior (B). Most the time, I find that a change of attitude is not enough. I have a very good attitude toward music, but hardly any musical skills. It is true that I first need a positive attitude toward something to change my behavior. The two usually go hand in hand. But in learning, I am usually tested on my behavior and skills, not on my attitude. I never had a test that promised me an "A" for a good explanation of my musical attitude. Whoever they are, they want me to sing or play a piano. They want me to demonstrate my musical talents. And that would result in an "F." All learning of skills is behavior change. Especially, the learning-to-learn skills in this book.

1.13 DETERMINE THE LEVELS OF THE VERBS.

Value a decision (A). In attitudinal objectives, you express thoughts and feelings mainly about objects, people, and ideas. Your emotions, to a large extent, influence all that you learn. Valued concepts call for positive objectives (PL), harmful ones for the avoidance of negative objectives (NL). The "L" stands for "Level." A PL objectives may be "to enjoy the art project," while a NL objective could be "to resist the temptation to consume alcohol." Examples of PL and NL verbs are:

PL. To value, to accept, to approve, to complete, to support, to prefer, to enjoy.

NL. To reject, to disapprove, to condemn, to resist, to avoid.

Place a performance-based verb in the behavioral objective. (B) As I wrote before, most learning objectives are behavioral objectives. You are trying to gain a new skill that you can perform under given circumstances. Behavioral objectives have been classified in many ways, and the most common classification, also called taxonomy, is by Bloom (1956). Bloom's taxonomy of cognitive objectives has six levels, but I have chosen to adapt here only the first three levels. For general use, they are the most helpful ones. I have called them level 1 to 3, or L1, L2 and L3 for short. Below is an outline of the major levels of objectives.

L1. To describe____(what you know; the literal)

L2. To explain_____(what you comprehend; the interpretive)

L3. To perform_____(what you have applied, the action)

To describe a concept (L1). Your five senses help you perceive what goes on around you. As your brain processes all the data, you may be able to describe what you see and hear. As I type, I see a computer keyboard with the letters of the alphabet and various symbols. I have just described, in part, a computer keyboard. So a very simple basic L1 (level 1) objective may be "to describe the picture on the cover of this book." Other verbs in this category are: to name, to match, to recall, to recognize, and to state (Gronlund 1970, 21).

To explain a process (L2). This is harder. I may be asked to explain how the computer keyboard works. Really, I do not know, but I have a general idea that there must be some electrical connection every time I push a key. I do not understand how the switches work, because I have never taken a keyboard apart, or seen a working cut-away model of one, or read an explanation of it. So I would have to do some studying before I could meet the L2 (level 2) objective. I would have to do some active learning "to explain how a computer keyboard works." This level of objectives deals with understanding. You try to avoid misconceptions and misunderstandings. Among other L2 verbs are: to convert, to rewrite, to infer, to generalize, to estimate, to defend, to contrast, to compare, and to distinguish.

To perform a task (L3). The first two levels of objectives are basic. These levels deal primarily with words and ideas. Level 3 (L3) deals with real or simulated life. It calls for the application of what you have learned in L1 and L2. I may be asked to construct a model of a new computer keyboard that does not make my hands so tired. I would first have to know much about my present keyboard. I would have to know how it works. Then I would have to be able to actually design and put together something better than I have now. That is no easy task. Thus my objective would be: "To construct a user-friendly computer keyboard." Nearly all section and paragraph titles in this book are L3 objectives. Level 3 objective verbs include: to provide, to change, to discover, to show, to compute, to manipulate, to modify, to produce, to group, to design, to develop, to prepare, to propose, and to solve a problem.

1.14 DESIGNATE THE LEARNING OUTCOMES.

Answer "With what learning outcomes?" In the above section on L2, I explained the use of action verbs in objectives. At the very least, objectives have to contain not only action verbs, but also learning outcomes. They have to present the result-nouns. Thus, in the foregoing examples of objectives, the result-nouns were related to the computer keyboard. The result-noun gives a clue to the learning outcome.

When you are finished, what is the learning outcome? What do you have? The results may be, among others, defensible judgments, conclusions, interpretations or decisions (Gagne and Driscoll 1988, 43-62).

Write attitude learning outcomes. A-Objectives deal with attitudes. Then, the result may be a concept, a point of view, a commitment, or anything that fits into the category of attitudes.

Write behavioral learning outcomes. When I finish my writing, I will have a completed book. The book is the result-noun. So behavior (B), for my purpose here at least, results in something, in a learning outcome. The results may be products, movements, relationships, or something else. The table below gives further examples of A-B Objectives.

Table 2. Examples of A-B Objectives

	A	B	C	D
VALUE PL (+)	to select a hat	to arrange a display	to serve a widow	to prioritize a list
AVOID NL (-)	to resist failure	to disapprove of cheating	to reject gambling	to condemn stealing
DESCRIBE L1	to define "learning"	to label 10 trees	to identify 10 flowers	to list the bones
EXPLAIN L2	to summarize QLearn	to paraphrase Chapter 1	to clarify a plan	to distinguish 2 birds
PERFORM L3	to use a brush	to illustrate "war"	to make a box	to demonstrate drawing

The Frederick County, Maryland, schools have moved from student seat-time, or attendance, as an indicator of learning to subject mastery in an outcome-based system of effective instruction. The following integrated learning behaviors in Table 4 serve as developmental and exit learning outcomes. They also may serve as good objectives for your general learning (Castner, Costella and Hess, 1993, 47).

Table 3. Essential Learning Behaviors*

1.	To use effective communication skills	L3
2.	To solve problems	L3
3.	To think critically	PL
4.	To demonstrate social cooperation and self-discipline	L3
5.	To work responsibly in the community and environment	L3
6.	To practice health and esthetics	L3

* Adapted from Castner, Costella and Hess, 1993, 47.

LEARNING CHALLENGES

Select a chapter of a book or a series of 10 lessons as a basis for the following.

1. Write ten attitude objectives and underline the learning outcomes.
2. Write ten behavioral objectives each at the L1, L2, and L3 levels and underline the learning outcomes.

1.2 DESIGN LEARNING OUTCOME OBJECTIVES.

There are at least two ways of writing objectives. In the last section, I dealt with short A-B Objectives. You will often find that these short objectives are inadequate for more complex tasks. Thus I also present the L-O Objectives.

BRAINWORK

"When we step beyond motivation based on pleasure, power, and participation, we open up consciousness to experience new opportunities for being that lead to emergent structures of self. This is autotelic motivation, because its goal is primarily the experience itself, rather than any future reward or advantage it may bring" (Csikszentmihalyi 1988, 29).

First you can learn to reach for objectives with rewards and advantages. After that, you may enjoy objectives where the journey, not the destination, is the outcome. In this chapter, I deal here primarily with the first type.

1.21 EXPLORE TIME, PERSONNEL, CONDITION.

In the chapter on A-B objectives, I dealt only with the essence of the objectives, namely the action verbs and the learning outcomes.

This chapter builds on the last chapter, and all that was written there is also applicable for learning outcome objectives (L-O Objectives). L-O Objectives have five additional parts and I present them here.

State the time-line. The time-line is the third part of the L-O Objective. The first two parts, actions and learning outcomes, were presented in the previous chapter. I can do many things if I have enough time to do them. Generally, my time to accomplish anything is limited. I have a deadline for the writing of this book . You have to hand a particular assignment to the teacher by a given date and time. So you usually ask yourself, "By what time do I have to finish this?" The time-line is part of the L-O Objective. So, for example, my objective is to write this book by November 30, 1993. After that, there is still much work in the publishing, but my objective is to complete the manuscript fully by that date. It goes without saying that I have to keep writing and motivated to meet this deadline.

List the person(s) involved in the objective. In the above case, I am doing the writing. So I am the person involved. Then there are my editors. In many cases, other individuals beside the main "actor" will have a part. In real life, people usually work together in teams or in groups. In my present example, the "I" is the person mainly involved in this objective.

Determine the conditions and resources. Often the conditions and resources decide if and when we can meet an objective. I need a quiet place and a computer in order to write. I also have before me a very detailed writing outline that I have developed over the last four years. Thus writing is easier . Without this prewritten outline of the QLearn system and other books on this subject that I have written before, I could not complete the book by the given deadline. I need resources to meet my objectives. Thus my example objective may read: "Given a computer and writing outline, I will write the Learn in Brain-Friendly Ways book by November 30, 1993." The objective is slowly becoming more definite and the learning outcomes more specific. But we are not yet finished.

1.22 SELECT STANDARD OF MASTERY.

Set standards. My big question in an objective always concerns the method of evaluation that helps me decide if I have achieved my L-O Objective. It is easy to write a draft once and call it a book. But there are standards for good books. I will be satisfied only if my book meets these standards at the 99% level. I know that I cannot write a perfect book, but I follow set standards that help me determine the quality of my work. This is why I call the whole system Quality Learning. For without standards, too many things pass for learning. What are the standards by which the learning outcomes will be judged? The quality standards make the difference between QLearn and mislearning. As I wrote earlier, learning that fails to achieve 60% of a quality criterion is mislearning.

Definition of standards. Standards are then the laws, rules, specifications, norms, regulations, principles or policies that form the 100% toward which the learner aims his or her learning outcomes. Sometimes the standard will be the opinion of an expert, like a teacher or a professor. In my case, my standard for writing is a list of specifications developed by my review board. That list is very similar to the one presented in Part II, Chapter 4.4 as the ten suggestions for good theme-reports. If the review board states that I have followed their list of ten suggestions for good writing and accepts the book, I have met the standard. If the review board determines that I have not followed the list of suggestions and rejects the book, I have not met the standard. But as you will see in the next paragraph, I do not always have to meet the standard fully. Other standards often used in developing objectives are textbooks, reference books, tests, and models.

Determine the degree of desired mastery. In complex learning, you are usually unable to achieve 100% of the standard. In trigonometry, you will be quite satisfied if you solve all given problems at 95 percent or at the 0.95 level.

Consider an example of mastery. I return to my example. My book review board does not expect a perfect book. They have determined that if I meet all their standards at the 99% level, they will be satisfied and recommend the manuscript. Since you are now reading this book, you can be assured that the manuscript was accepted by my book review board at least at the 99% standard. To put it another way, the mastery describes the degree to which a particular outcome satisfies the set standard. By the way, the mastery may be expressed as a percentage, a grade, a number from one to five (with five the best), by a total number, or in other ways.

1.23 WRITE THE LEARNING OBJECTIVES.

You may recall that I presented two parts of L-O Objectives in the last chapter. I presented the other parts of the L-O Objectives above. Now it is time for you to put all the parts together and come up with an L-O Objective. The final learning outcome objective is usually written in a different order from the one which I presented in the parts, but that should not disturb you. Table 4 presents some examples.

By When?______________________(Date)

Who?__________________________(Person)

Under What Conditions_____________(Resources)

* Do What?______________________(Action-verb) from 1.13

* With What Outcome?_____________(Result, Performance) 1.14

How Well?______________________(Expected standard, %)

By What Criteria?_________________(Criteria, etc)

(* A-B Objectives presented in 1.1)

Table 4. Examples of L-O Objectives

Obj. Level	Example
LA	By noon, June 1, 199X, Jack Hill and Bill White, given $50, will select a video on world hunger that fully meets the criteria of clarity, comprehensiveness, and accuracy.
L1	By the end of the course, Bill Kim, given only paper and a pencil, will describe the five parts of QLearn as presented in this book with 95% accuracy.
L2	By the end of the month, Joe Green, given 10 minutes, will fully explain how to write objectives according to the L-O Objectives method.
L3	By the end of the term, learners in the class, given a basketball, will shoot the hoop from 20 feet, 60% of the time.
L3	By December 15, 199X, Jim Short, will correctly calculate the difficulty index of 10 sets of test scores 90% of the time.

As shown in Figure 7, you may graph the progress toward your L-O Objective with the help of a line graph. This may help you see if you are on track toward reaching your objective on time and with good quality. Each measurement along the way is like a mile-post in your progress toward reaching your objective. These mile-posts may also be expressed as subordinate objectives or sub-objectives. Some learners have found it helpful to reward themselves in some small way after they have reached a milepost successfully on time. You may want to consider that.

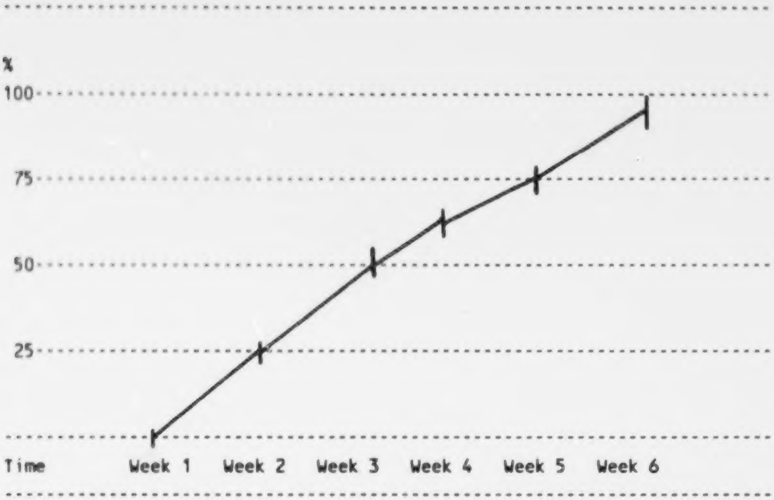


Fig. 7. Example of Objective Graphics

LEARNING CHALLENGES

Select a chapter of a book or a series of 10 lessons as a basis for the following:

1. Write ten behavioral L-O Objectives each at the L1, L2, and L3 level and separate the seven parts that make up the objectives by commas.
2. In three-sentence paragraphs for each objective, explain the standard and mastery level for the above objectives.

2. USE QLearn RESOURCES.

2. RESOURCES

The first thing you usually do when you start learning something is to get a book that tells you all you want to know. You read and you know. You may study in a school or at a university, and there the teacher explains the book. Sometimes it works, sometimes it does not work. Things are not that simple. That is the reason that there is so much mislearning.

One textbook is often insufficient. Especially since many textbooks are brain-unfriendly. Many are hard to read and use. They may present the facts well, but usually they do not lead you along the path toward new attitudes or new skills. Most writers forget their main job. "It is up to you to dig it out and then apply it," they say. Well, thank you very much, but I could use some help.

Thus Quality Learning includes a collection of materials that helps people learn. This package of resources comprises a textbook, a student's guide, a teacher's manual, and a cassette. Good educational resources use many channels to help learning.

I have been in classes where the teacher mainly explains a textbook. The teacher herself has no particular objective, neither do the students. "I must cover the text" becomes the unwritten objective of the teacher and her students. That is boring. We just plow through the pages together. Many a teacher still starts a class with the question "On what page did we leave off?" If the teacher does not know where she is and where she is going, how can the students?

In order to write this book, I collected boxes of impressive resources. Behind me, near my computer, I have a bookcase full of reference works and books and articles on the brain, on learning, on study-skills, on learning to learn, and other related subjects. Many books and articles have very good illustrations. I type this manuscript on a note-book computer and check and recheck my writing style with a computer program called Grammatic 4.

You may want to evaluate your learning resources. Some learners have impoverished (-) learning resources, others have standard ones (+), still others have enriched (++) ones. Having impoverished learning resources usually leads to mislearning.

2.1 EMPLOY BOOK-PROBES.

As a life-long learner, I love books. I buy many books. I read them. Books are part of my life. But even that is not enough for QLearn. I must probe into books as a miner seeks for gold. As a miner, I have to know where to find the gold. Otherwise I waste my time and mislearn.

BRAINWORK

"The brain is constructed for much more demanding intellectual activity than it usually experiences. We use the brain better when we enrich our experiences so that our brains can extract new and more complex ways of communication and interacting with the world" (Caine and Caine 1991, 36).

You interact with one of the greatest resources of communication when you open a book or enter a library. You cannot learn everything first-hand, but you can enrich your experience by reading. This enrichment of intellect comes from reading smarter, not necessarily from reading more.

2.11 FIND THE PROPER BOOK CATEGORY.

Explore libraries. I have discovered that the best and cheapest place to find the right book is in a good library. Not only are there many books, but there are also aids that can help me find the books, magazines, newspapers, reports, folders, and journals I need. Some of these aids are the card or computer catalogs, the indexes, and the Reader's Guide to Periodical Literature. It may surprise you that few people really know how to make full use of a library. So go to a good library, and find some books on how to use a library.

Browse in bookstores. What I cannot find in a library, such as current books, I try to find in a bookstore. If you are a serious learner, you already know all the good bookstores in town. Look in your telephone directory to make sure that you have not missed some that deal with your special interests. When you go to a bookstore, first acquaint yourself with the store layout and the location of the various categories of books. Do not be afraid to ask the clerks for what you need. They are usually very helpful.

Organize your home library. Do you have your home library organized and can you easily find every book you need? In order to write this book, I reorganized my home library. Right now I have my reference books and books that deal with learning within arms's reach of my computer. And I know the location of every book and article. So I do not waste my time looking under piles of papers to find an article in a journal. It was not always this way. Writing this book improved the quality of my filing and thus my learning.

Check bibliographies. A bibliography is just a fancy name for a list of books. I find book-lists helpful, for they lead me to new treasures. I search the bibliographies of my books to locate writings that I want to survey. Often, someone else had the same idea that I had long before I ever came along. Then I need to give credit where credit is due. I include that source in my documentation, even when I think that I was the first one to come up with this bright thought. I even try to give credit to other writers who inspire me with new ideas.

2.12 USE REFERENCE BOOKS.

On the outside, reference books look like other books. Yet they belong to a different category than textbooks, travelogues, or general reading books. Reference books are used over and over again in learning. They are organized to hold most of the general information that you may need. You, as a serious learner, will want to buy and organize your own reference library. Here is a short list of reference books and how they can help you in your learning.

Table 5. Examples of Basic Reference Books and their Usage

Uses	A	B	C	D
DICTIONARY	Meaning	Spelling	Pronunciation	Word usage
THESAURUS	Synonyms	Antonyms	Idioms	Contrasts
ATLAS	Cities	Roads	Environment	History
ENCYCLOPEDIA	Biographies	Overviews	Categories	References
YEARBOOK	Data	Facts	Statistics	Summeries

2.13 OUTLINE THE CONTENT.

Read the table of contents. After you pick up a book and read the title, you need to find out what the book is about. The table of contents usually gives you a good idea. Spend time with it. Often that table leads you right to the page that interests you.

Review the index and glossary. If the table of contents is not helpful, do not give up. Look at the index and the glossary. If your key terms are listed, you can find the page with the needed information and go on from there. If you find nothing in the table of contents, the index, or the glossary, leaf through the book and look at the headings and illustrations. Something may catch your eye. From your assignments or from other sources, you may find out that you need to read the whole book. Do not get sidetracked and spend your time with books that are not helpful. I often survey 10 books for every one in which I find something useful and relevant.

Prepare T-Notes and summaries. Once you have decided that a particular book will help your learning, read it with your eyes, your heart and your pen. You can and should mark up your own books. Parts of library books you can photocopy, or you can take T-Notes or summaries. More about this in Chapter 3.3.

Write outlines. I have found that outlines are useful in many cases of note-taking. This book is written from a three-level outline. You may use either I., A., 1., a., (1) or the more modern method of 1., 1.1, 1.11, 1.111, 1.1111. While outlines are helpful, you may also want to explore box-graphics. Graphic representations often organize the parts better than outlines.

2.14 DOCUMENT LEARNING SOURCES.

Use published information. You will be surprised how much published material never finds its way into libraries or book-stores. Commercial enterprises, armies, governments, voluntary organizations and individuals print millions of publications, some of which may concern your topic of study. So sometimes the telephone directory is your most important reference book. Perhaps I should list it with the reference books and move it away from the telephone.

Acknowledge published information. You have noted that when I quote someone, I place his name in brackets with the year of the publication. I follow that with a comma and the page number of the source (Klimes 1991, 80). This is called bracketed documentation. The older method, and some disciplines still require it, is foot-noting. Personally, I find brackets easier and faster (Turabian 1987, 111-119).

Make bibliographical entries. Bibliographical entries are usually placed at the end of a book or report. They are the book-lists we mentioned in a previous section. In the Turabian (1987) system I use, the bibliographical entry has five parts:

- Author's name: Klimes, Rudolf E.
- Year of publication: 1994.
- Title, underlined: Learn in Brain-friendly Ways.
- City, State of publication: Orangevale, CA:
- Publisher: LearnWell Resources.

Remember that, in documentation, the order and punctuation is very important. All parts of an entry end with a period, except the place of publication, which ends with a semi-colon. Further, all entries are given in alphabetical order of the authors' last names. In your notes, you will want to include the library number, if there is one. The library number will not be included in your report, but is important so that you can find the book again if you need it. As you probe for books and materials, develop your bibliography. It makes learning easier. You will not waste time trying to find a paragraph that you know you read but cannot remember where. Well, not always, but it will help.

LEARNING CHALLENGES

Write a study question and use it as basis for the following:

1. Find and outline five relevant books.
   The outlines are to be one page long.

2. In five-sentence paragraphs each, summarize the relevant content of five reference books.

3. Document the above and produce a bibliography.

2.2 PURSUE AUDIOVISUAL-QUESTS.

By now you have discovered that I am a visual learner. I learn better from pictures than from sounds. But I learn best when pictures and sounds are combined. When I am committed to a clear objective, audiovisuals are, for me, great teachers. Otherwise, I just sit there passively and let the pictures and sounds flood me. That is entertainment. But it may also be mislearning.

BRAINWORK

"Unfortunately, television, audiotapes, and CD players do not allow students to raise searching questions, enter into debate, formulate their own opinions, develop a moral philosophy, engage in problem solving or critical thinking, or test their view of reality" (Caine and Caine 1991, 17).

Audiovisuals are effective learning aids when used correctly. In all other cases they are entertainment or just plain boring. As you study, you may see and hear what others do not see and hear, and thus may learn more effectively. You may also want to consider producing your own audio and video tapes. Some students thus record lectures, events or situations that help them learn. In the past, you may have thought of audiovisuals as only being used by teachers. Instructors use them to help you learn. So teach yourself with audiovisuals.

2.21 LISTEN ACTIVELY.

Maintain eye-contact. Somehow you hear better when you look into the eyes of the speaker. The eyes often communicate what the voice cannot say. That is why the people in the back rows are often bored, they only "hear" half what is said.

Note gestures and posture. Not your eyes alone communicate, but your whole body. That includes your hands, your movements, and especially, your posture. By being sensitive to body-language, you "hear" more than those who only keep their ears open.

Listen for emotional expressions. A speaker's feelings fluctuate with the content. The important things are usually emphasized. Often you can tell the main points from the emotions that the speaker displays. An active listener can often know what a teacher will ask on a test. I have received A's in classes in which I listened actively, not because I studied hard. I listen with my ears, my eyes, and my pen.

Provide verbal and nonverbal encouragement to the speaker. There are great differences between dead classes and living classes. Sometimes I can bring a dead class alive, sometimes I cannot. Living classes receive much more help from their teachers than dead classes or dead individuals. So look alive, lean forward, nod your head when appropriate, and do not fear asking questions. You may just learn something.

2.22 READ (AND DECODE) AUDIOVISUALS.

Perceive and identify components. You are constantly exposed to drawings, pictures, and a host of other audiovisuals. You can learn to read them like a book. Most graphics have parts. There are main points and supporting points. There is a background. And ask yourself: "What was the artist trying to say?"

Analyze the parts. It is not enough to superficially identify the components that make up a graphic. Analyze the various parts. Compare and contrast their characteristics. Note their strengths and weaknesses. Mark their relationships.

Compare sections. Graphics are developed to communicate. The various parts of a graphic tell different stories. How do the stories differ? What section is most relevant to your topic?

Draw inferences. Just as a problem has to be solved, graphics call for conclusions and inferences. Try to summarize in words what the graphic tells in pictures. By translating lines into words, you clarify meanings. More about this will be presented in section 4.1 under box-graphics.

2.23 MAKE (AND ENCODE) AUDIOVISUALS.

Select subjects. You can often learn best by drawing rather than by writing or talking. If you can draw squares and circles, you can produce audiovisuals. So do not fear failure. With some practice, you can learn to make simple graphics . First, be very clear what parts you want to illustrate. Sometimes just copying someone else's audiovisual is an effective learning method. Often you will want to develop your audiovisual for your notes or for a report. Some examples are presented in Table 6.

Table 6. Examples of Audiovisuals

	A	B
NON-PROJECTED VISUALS	Pictures, Box-Graphics	Models/ Real objects
PROJECTED VISUALS	Video-tapes	Film / slides
AUDIO MEDIA	Cassette	Records
MULTI-MEDIA	Interactive Video	TV/ Games

Balance on the one-third dividing lines. Most people place the most important part of a picture in the middle of the page, that is on the half-dividing line. This makes for a very static picture. Try placing it over to one or the other side on the one-third dividing line. This adds movement and depth to your graphic (Heinich, Molenda and Russell 1985, 7).

Color the background and various parts. Your brain processes colors apart from shapes and movements. Thus colors add dimensions that help improve your memory. The background does not have to be white. The letters do not have to be black. If it were not for the cost, I would like to color-code this whole book and thus help you learn better.

Letters to be 2.5 cm per 10 meters distance. You have been to many lectures where the students in the back row cannot make out the letters on the chart or blackboard because they are so small. Follow the normal standard (Heinich, Molenda and Russell 1985). To read something from 20 meters away, you need letters that are 5 cm tall (or 1 inch for 32 feet). And the larger your outlines, the easier for you to remember them. So do not fear to use large letters.

2.24 VISUALIZE WHAT YOU SEE AND HEAR.

Relax with exercises or deep breathing. I see not only with my eyes, but also with my mind. I replay the outside picture on something like a screen in my head. I do this best when I am fully relaxed. Deep breathing often helps me to slow down and feel rested.

Picture yourself doing the skill. Put yourself into the picture. Make it your own. See yourself standing there, doing what you are learning to do. This is, in part, how Olympic champions practice high jumping, racing and many other sports. In your mind, you can go over every little detail. In a way, you are practicing a pattern for your neuron firing. Then when you actually do the action, your mind is already programmed.

Remember and repeat the feeling. It is not the skill only that counts in visualization. The feeling of power and success may be just as important. So taste the emotions as you practice your skills in your head. Figure 8 presents an old German trade design that expresses the atmosphere in an ancient tailor shop.

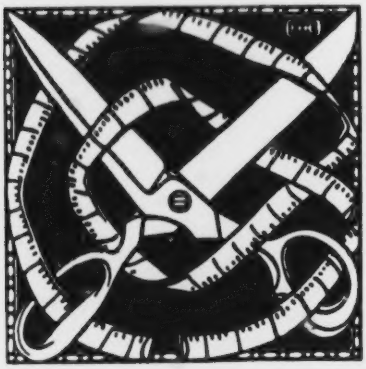


Fig. 8. Example of Old German Trade Design

LEARNING CHALLENGES

Write a study question and use it as basis for the following:

1. Find and outline two relevant audiovisuals.
2. In five-sentence paragraphs each, describe and decode two relevant audiovisuals.
3. Produce two appropriate audiovisuals. State the objectives and describe their usage.

2.3 CONDUCT COMPUTER-SEARCHES.

A computer is not absolutely necessary to QLearn, but it helps. It makes editing and rewriting so much easier. It helps you analyze and store so many things. Without a computer, much of learning is often just too much trouble.

BRAINWORK

> "Attention is the medium that makes
> information appear in consciousness.
> The human organ is limited in
> discriminating a maximum of about
> seven bits, or chunks, of information
> per unit of time. Orme... estimates
> the duration of such an 'attentional
> unit' to be on the order of...
> 126 bits, in the space of a second...
> It is claimed that to extract phonemic
> information from (chunked) speech
> signals would take...40 bits per
> second..."(Csikszentmihalyi 1988, 17, 18)

Your brain is limited to the number of things it can pay attention to and its ability to process incoming signals. You cannot read a book on physics and explain QLearn at the same time. Or at least you cannot do it effectively. Your computer also has limits. The more you push on the sides of your mind's envelope and stretch it to the limits, the more you learn. Search the limits of your brain and of your computer.

2.31 SURVEY OPERATING SYSTEMS.

Understand computer operations. I use a Microsoft disk operating system on my computer. You may use another one. You will not get the full use out of your computer, unless you learn what your operating system can do and what it cannot do. Spend some time with your operating system manual. And if you do not have one, get one.

Manipulate files and data. I have placed hundreds of files on my hard disk and on various floppy disks. I have learned to copy, to shift, and to delete these files. There are many operations that you need to know. That is what it means to be computer literate. And QLearners are computer literate.

Utilize a computer language. Many people find it useful to write their programs or to adapt programs to their needs. This is not always essential, but it may be helpful in many areas of study. As better and better computer software comes on the market, a learner's need to write his own program decreases. I have not written a computer program in years. That does not mean that computer languages are obsolete. They can give you a freedom that you may need in your discipline.

2.32 WRITE WITH A WORD PROCESSOR.

Understand word processing basics. Most learners use computers mainly as word processors. I am right now using a word processing program to write this book. I could not write and edit it in the given time without a word processor. Again, keep your work manual handy. You will save much time if you use it wisely.

Practice word processing. The more you use the word processor, the more skilled you will become. Explore some sub-programs that you may not be familiar with.

Edit the results. I will edit what I now write about twelve times. I will print it out several times. I will keep on making changes. Only thus can I produce a quality product. And even then, something is bound to slip by. If you find something that I missed, please write to me.

2.33 USE PREPARED SOFTWARE PROGRAMS.

Use manuals. My computer really comes alive when I use some of the larger software programs like SPSS, desktop publishing, graphics and accounting programs. These programs provide a further basis for my learning. And they make me more productive.

Explore the system. Many software programs provide learning exercises and sample programs. Use them. They help you explore the potential of the program and learn faster.

Apply the programs. You really are not a qualified user of a software program until you have used it with some real data or information. Many people have more software programs than they can use effectively. But once they apply them, they wonder how they ever got along without them.

2.34 USE INTERACTIVE LESSONS.

I do not have much experience with interactive programs. Every year, more and more sophisticated programs appear on the market. A well known one is PLATO, which stands for Programmed Logic for Automated Teaching Operations which was developed by the University of Illinois in Urbana. PLATO has been used by thousands of students for the learning of dozens of subjects. Some modern textbooks now come with interactive lessons. I wish I could provide such programs for this book. If you can help me, please write me a letter. I would love to explore it with you. The interaction also may involve video and tape sections. But for many learners around the world, this area is still a field of the future.

Computer technology is changing fast to support authentic learning. "Ground has been broken for a nationwide 'information superhighway' that will allow high-speed transfer of text, voice, and images along fiber optic lines.... Once established, the scenario goes, students could easily 'tour' Versailles electronically, 'browse' the vast holdings of the Library of Congress, or swap E-mail with a paleontologist" (O'Neil 1993, 4). The next table lists some examples of computer software.

Table 7. Examples of Computer Software

	A	B	C
OPERATING SYSTEMS	MS-DOS	APPLE	OS/2
LANGUAGES	Basic	Logo	Pascal
WORD PROCESSORS	WordPerfect	Word	WordStar
PREPARED PROGRAMS	Lotus 1 2 3	DBASE	SPSS
INTERACTIVE PROGRAMS	Computer-Assisted Instruction	Tutorials	Robotics

LEARNING CHALLENGES

Write a study question and use it as basis for the following:

1. Using a word processor, explain in one page how a computer can help with the above question. Attach the print-out.

2. Demonstrate the use of one prepared computer program in relation to the above question. Attach print-outs.

3. PARTICIPATE IN MICRO - LEARNING ACTIVITIES.

Memory
NOTE

3. MICRO-LEARNING

You have come a long way toward quality learning. But learning is more than getting and reading books. Now I ask you to submerge yourself with skill in challenging micro-learning. Learning requires total immersion in the subject to be learned. If your hands stick out and do something else, learning is hampered. Learning requires a high degree of competency in learning skills. You may think that you are a skilled learner, but after you finish this part, you may want to reevaluate your response. Most of all, it is very hard to master anything that is boring. And much school-work is boring. So you have to redesign it yourself, and find the challenges in it.

You may have considered your studies a sideline. Your studies may have interfered with your fun. Thus the outcome was often mislearning. Quality learning can never be done on the periphery. It requires total dedication and concentration. Your brain can do just so many things at the same time. If you really learn botany, there is little brain-power left for nightly parties. Both require your full attention, and you cannot do them simultaneously.

You ask about this strange term "micro-learning." "It is not in my dictionary," you say. Well, it is not in my dictionary either. Micro-learning is that detailed learning that goes deep into the selected subject itself and that helps organize it for future use. The problem with most learning is that it is superficial. Authors and teachers give an overview and let students fill in the blanks. The students may know how to fill the blanks, but they may have no idea of how to cross the bridge from the facts, as they are presented in books, to the completion of useful products. Micro-learning helps discover the many details along the way to the learning outcomes.

In micro-learning, you first have to know what you and the book authors are talking about. You need a common vocabulary. Then you need to understand in detail the subject matter at hand. The words have to have meaning for you. You have to analyze the topic or question and find the parts that make up the whole. Later, in the chapters on macro-learning, you can figure out how all the parts relate together.

As you immerse yourself in this section, you and I will participate *in micro-learning together.* I cannot do it alone, and neither can you. I cannot "learn" you, I cannot learn for you, I cannot make you learn, I can only help you to learn. You have to participate in your learning not just passively by sitting and listening, but actively by eating, digesting and using the selected learning resources. Please take on the learning challenges at the end of each chapter. Good luck.

3.1 DRAW MARK-LINES.

You can read with your eyes, with your heart, or with your pen. Or a combination of these. An unmarked book is like an uncut loaf of bread. You really have not gotten into it. That is why I buy my books and make them mine with markings, underlining, and comments. Thus I QLearn.

BRAINWORK

> "For us to communicate with words, our brain must simultaneously search, sort, select, formulate, order, organize, link, and make sense of a mixture of previous words and ideas. At the same time, these words are interwoven with pictures, symbols, images, sounds, and feelings" (DePorter 1992, 150).

You can help your brain make sense of the collection of words and ideas in your notes and books by using mark-lines. If you search carefully, there is most likely a pattern in all that mixture of what appears verbal garbage. Discover the interwoven pictures that are hidden there. The purpose of mark-lines is to help you find and organize the important components of written work.

The mark-lines are individually yours and they fit your thinking. They may make little sense to others. Thus books that are published with highlighted areas may not be as helpful as the author thought. Through mark-lines, you make the writing your own and fit it to your neural network. So start underlining.

3.11 UNDERLINE WORDS AND PHRASES.

Select important parts. Do not underline on the first reading. If you do this, you may end up underlining a whole paragraph. And if everything seems important, in the end nothing becomes important. At the first reading, you do not know what is really important within the context of the paragraph. If there are two or three main points, weigh them carefully and judge their importance as to their contribution to the central theme or question. Types of underlinings are shown in Table 8.

Underline phrases sparingly. Too much underlining is as bad as too much marking. If in doubt, less underlining is better than more. That way at least the main points stand out.

Use other markings. You have many tools in your learning tool-box. Use them wisely. There are question marks, questions, symbols, comments, and other markings to annotate your book or notes. Mark-lines may be drawn with pencils, pens, colored pencils, or colored highlighters (Langan 1982, 134).

You may want to develop your system of underlining key words and main ideas as you mark your book or notes. Very simply, my system consists only of underlining important words or phrases and of circling key-words. Most people prefer to underline first and then to circle the key-words. But discriminative reading followed by circling the key-words and then underlining is often advised. That calls for more thinking.

At times, underlining can become too automatic. It is easy to just keep reading and underlining without thinking. The additional analytical mark-lines are more discriminating and thus more useful. The additional underlining differentiates between the various components that are deemed important.

Table 8. Types of Mark-lines

Solid lines	or	black	for outcomes
Ovals.	or	red	for key-words

ADDITIONAL OPTIONAL (ANALYTICAL) MARK-LINES:

Wavy lines.	or	orange	for persons
Broken lines	or	yellow	for places and times
Boxes.	or	green	for reasons
Open boxes.	or	blue	for methods

3.12 MARK QUESTIONS.

You may want to mark not only what you read, but also what you do not read. Respond to the missing parts, if there are any. You can read critically, continually asking questions of yourself and the text. To mark these questions, I use the same underlining as in the above section and place a question mark on the underline. The marks then become questions I may have in my mind or that I want to generate about a sentence. Of course, I may also just write questions in the margin. In marking, the questions are often more important than the answers. The answers may come later. Here are the markings of the questions.

Table 9. Marking of Questions

What	$\underline{?}$
Who	$\underset{\sim\sim\sim}{?}$
When/Where	$\underset{- - -}{?}$
Why	$\boxed{?}$
How	$\lfloor ? \rfloor$

3.13 ADD SYMBOLS.

Often underlining and question marks are not enough. Then symbols may help. Use stars to indicate main sentences. Most people use some symbols. There are at least four types of symbols, namely descriptions, comparatives, evaluations, and those concerned with lists. I present some examples in Table 10.

3.14 MAKE MARGIN NOTES.

Comment about content. As you read, you often notice special points. Unless you make a note of them right away, they may be lost forever. It is also helpful to identify definitions with the abbreviation "Def." and examples with "Ex." You may have many other comments and abbreviations that you find useful.

Table 10. Examples of Marking Symbols

	A	B	C	D	E
DESCRIPTIONS	+	-	→	( )	|
COMPARATIVES	=	≐	≠	>	<
EVALUATIONS	A, *, ✓	B	C	D	F
LISTINGS	1	2	3	4	5

Comment about other content. I not only make notes about the content I read, but I try to relate it to other sources. Often other authors have used similar ideas in quite different ways. That is worth commenting on.

Comment on your thoughts. My comments often do not deal with other people's thoughts. As I read, my memory associates the new ideas with old ones stored in my brain. Thus fresh and original concepts develop. They too are worth writing down as marginal notes. While your book may become a bit messy, it also becomes a valuable tool.

LEARNING CHALLENGES

Use this chapter as basis for the following:

1. Draw appropriate mark-lines in this chapter.
2. Write a 300-word essay on what you learned through the process.

3.2 ASK SYSTEM-QUESTIONS.

In class, you have been studying about bees for an hour and you are full of questions because you know so little on this subject. You naturally want to find answers. You are "bursting at the seams" with questions, so you open your encyclopedia. The article there answers half your questions. You go to the library, and there you find answers to most of the remaining questions. Your teacher helps you with the rest.

BRAINWORK

"Questions stimulate the mind
and offer people an opportunity
to use their brains constructively.
The impulse to answer a question--
any question--is as automatic as
the 'fight or flight' response...
Hearing a question puts the
listener on the alert" (Leeds 1987, 24).

I keep six honest serving men.
They taught me all I know.
Their names are what and where, and when,
and how and why and who
(Rudyard Kipling).

You, like Kipling, have six serving men. As you ask questions, your brain enters a higher stage of alertness and thus you are more likely to QLearn. Stimulate your mind and the minds of others by developing effective system-questions. Rightly used, they are one of the main instruments in your learning tool-box. You may want to start by writing down what you already KNOW about your problem, then asking what you WANT to know, and lastly stating what you have LEARNED. This is called the K-W-L process (Smith 1993, 36). And remember, "The point of a question is to get you to think--not simply to answer it" (Robinson 1993, 266).

3.21 SELECT YOUR QUESTION TARGET.

You may direct a question to yourself, to a teacher, to a fellow student, or toward someone else. Most of the time you answer your own questions, and thus there is no need to go further. You are puzzled and uncertain, but with time, the answer often comes to you. But there are times the answer does not come. You cannot find it in your notes or books or anywhere else. Then it is time to seek outside help. No need to be ashamed to ask questions. Good questions show that your are thinking and learning. A foolish question exposes your ignorance. The fear of exposing your lack of knowledge stops you many times from asking questions. Don't fear, just prepare your questions well.

3.22 FORMULATE YOUR QUESTION.

As you formulate your inquiry, you may first want to answer a few questions about questions.

Could asking help or hurt?
What do you expect to learn by asking?
Why ask?
Are you interested in facts or opinions?
Is more than one question appropriate?

Below are some examples of system-questions. Some of the most commonly used questions are 5WH questions. They start with: Who and What, When and Where, Why and How . Reporters use them frequently. These questions are very useful for factual information. The questions refer to biographical, descriptive, chronological, geographical, rational and methological issues.

System-questions are a combination of 5WH questioning, Socratic questioning (Paul 1990) and quinta-mentional questions (Gallup 1947). In this method, as shown in Table 11, a broader range of questions is generated. 5WH questioning provides breadth, Socratic questioning lends depth. Quinta-mentional questions include concerns for attitudes and feelings. Four other powerful questions are: "So what? Says who? What if? and What does this remind me of?" (Robinson

1993, 72) Thus all bases are covered. It is not necessary to deal with all the questions presented in the example in all situations.

Table 11. Examples of System-questions

"Among Jim's teachers there was one who helped change his life. In his classes, Jim had to analyze and compare issues. The teacher took the time to listen to Jim's questions. Strangely, the teacher usually did not answer Jim's questions, but directed him so that he could figure out his own answers. There was a clear purpose to each class session, and Jim knew what was expected of him. He spent much time with his team-mates on their project. That is where much of the learning took place. As Jim wrote, he had to consider alternatives. The more he learned, the more he realized his condition and his need to change" (Klimes 1993, 15).

WHO speaks?	Who is presenting this incident?__________
WHO hears?	Who is reading this description?__________
WHO acts?	Who is the main actor?__________
WHAT happens?	What is happening to the main "actor"?__________
WHAT attitude?	What are the attitudes of the "actors"?__________
WHAT is assumed?	What learning situation is assumed?__________
WHAT source?	What was the source of learning?__________
WHAT evidence?	What evidence was there for learning?__________
WHAT outcomes?	What outcomes certified the learning?__________
WHEN was it?	When did this take place?__________
WHEN did it start?	When did the student-teacher relationship start?__________
WHEN did it end?	When and how did it end?__________
WHERE was it?	Where is this taking place?__________
WHERE is it from?	Where are the teacher/student from?__________
WHERE does it go?	Where is the student planning to go?__________
WHY is this (reason)?	Why is the teacher helping in this way?__________
WHY is it needed?	Why does the student learn in this way?__________
WHY is it valued?	Why does the teacher/student value this?__________
HOW does it work?	How does this type of learning work?__________
HOW is it different?	How is it different from usual practice?__________
HOW is it measured?	How is its effectiveness evaluated?__________

QLearn deals not only with learning, but a lifestyle of learning. Your life is a system with input, processes and output. Below in Table 12 is an example of system-questions as they apply to lifestyle considerations. You may find it helpful to go first through the main questions in each of the six categories. Then, if possible, explore the other questions.

Table 12. Examples of Lifestyle System-questions

1. Who is in charge of my life?________________________
   Who controls me?________________________
   Who am I?________________________

2. What is my life mission?________________________
   What do I value supremely?________________________
   What are my strongest needs?________________________

3. When do I live?*________________________
   When am I most excited?________________________
   When am I most peaceful?________________________

4. Where do I live?________________________
   Where am I most at home?________________________
   Where am I most troubled?________________________

5. Why do I live my life mission?________________________
   Why do I do what I do?________________________
   Why do I mishandle whatever I mishandle?________________________

6. How do I fulfill my life mission?________________________
   How well do I fulfill my life mission?________________________
   How well do I learn?________________________

* Some people live primarily in the past, others in the future. Still others live fully in the present. They are rooted in their past and have a mission that will be fulfilled in the future.

3.23 ANALYZE THE ANSWER.

Look for right or wrong facts. This is not as easy as it seems. You first have to decide your standards for right and wrong. Then you compare the answer to your standard. If it corresponds to the standard, it is right. If it does not, it is wrong. Without standards, to call something right is just to express an opinion that may be contrary to another person's opinion.

Consider short and long answers. Closed questions usually require a yes-or-no answer. These answers are short. They do not lead to further thinking and discussion. Open questions, on the other hand, usually call for longer answers and easily lead into an exchange of ideas. Often, there may not be one right answer, or any right answer. Or all answers may be right. Also remember that it takes time to come up with a meaningful answer. Too often, people expect answers in one or two seconds, when the brain may require five to ten seconds to process the question and formulate an answer. This is one of the reasons many teachers avoid class discussions. Their answers take a few seconds to process, and they fear that delay will be interpreted as incompetence by their students.

Evaluate the usefulness of the answers. When you ask a question, you have a certain purpose in mind. If that purpose is met, the answer is useful. If it is not met, it is not useful. It is as simple as that.

3.24 RESPOND TO THE ANSWER.

The questioning process is not finished when the answer is given. To complete the process, the questioner has to react to the person answering. You may react verbally or non-verbally. Sometimes a nod will do. Or a certain type of look. Your acknowledgment of the answer may be positive or negative. You may want to correct a wrong answer. Or you may want to ask follow-up questions, also called probes. In that case, you will repeat the whole questioning process.

LEARNING CHALLENGES

Use the previous chapter on mark-lines as basis for the following:

1. Write out ten relevant system-questions.
2. Write paragraph answers to the above questions.

3.3 TAKE T-NOTES.

You may be the type that always carries a piece of paper and a pencil. When an idea comes, you write yourself a note. On the bus, you sleep or plan your next day. Or you may want to remember the highlights of a library book. So you write yourself T-notes. They are called T-notes because the chart that is used in writing them resembles the letter "T". It is a type of split-page note-taking. This system is based on the Cornell format (Ellis 1990, 128-139) of note-taking.

BRAINWORK

"The more types of brain-mind connections we pay attention to, the more we expand our consciousness and increase the flexibility and fluency of our mental functioning" (Gross 1991, 33).

T-notes lead to the expansion of brain-mind connections and to an increase in mental functioning. T-notes help you see things you cannot see through reading, or that you cannot hear by just listening. Increase your learning flexibility with T-notes.

3.31 WRITE MAIN POINTS ON RIGHT SIDE.

Note the sources of materials. You can take T-notes about various materials. You can attend a class or a meeting and take T-notes on what is presented. You can go to the library and take T-notes on books. Or you can take T-notes on audiovisuals and computer programs. Or about your own thoughts. To ferret out the main points, you have to listen actively with all your being. If you miss the main points, you have missed most of the material. If you get the main points and supporting points confused, you may be in deep trouble. There are special words that help you find the main points. More on this is presented in Table 13.

Write phrases and sentences. As you listen with your pen, do not write down everything. If you do, you get flooded with information and miss the main points. Remember, you must both listen and write, nearly at the same time. If you do not listen, you do not know what to write. If you write too much, you have no time to listen. Thus in note-taking, phrases are usually better than complete sentences. You can complete the sentence later if needed. But whatever you write, it must be readable and make sense. Otherwise it is useless. If you cannot read your handwriting, slow down, and print so that you can read it. When you take notes of printed material, you may want to write one phrase to a line, and thus produce poem-like writing. Each line then is one stanza and one thought.

Pay special attention to the beginning and the ending. The most important parts of most lectures, presentations or articles are at the beginning and at the end. Usually the beginning includes an overview of the main points. The ending is often made up of a summary of the content.

Table 13. Examples of Word-guides that Lead to Main Points

	A	B	C	D
EMPHASIS	Most of all	Mainly	Above all	Especially
EVIDENCE	Therefore	Thus	Because	To support
ILLUSTRATORS	For example	A case is	To illustrate	To show
CONCLUSIONS	Finally	Hence	In conclusion	In summary

3.32 WRITE SUPPORTING POINTS.

Write definitions. Nearly every main point calls for supporting points. Definitions support and give meaning to main points. They avoid misunderstanding and clarify central meaning. They explain words in context.

Give proof and evidence. You may make a declarative statement, but it often has little persuasive power unless you back it up with proof and support it with evidence. In writing this book, I follow an outline that I have developed. The outline consists primarily of main points. These main points become headings and subheadings. Some are in capital letters, others are underlined. But the main points alone are not enough. Each main point requires support in the form of proof or evidence. As you read, you constantly ask yourself, "Why should I believe this?" And I constantly try to give you a reason to believe me.

Present examples. As valuable as the above supports are, they may still leave you confused. Thus there is a need for examples. In note-taking, I write down every example. Often the example is just as helpful as the statement of the main idea. I can later follow the example and retrace the way the problem can be solved. Without an example, I am often lost. This is one of the big mistakes mislearners make. They sit back and put down their pens when an example is presented. Make good notes of all examples.

Ask questions. I write my notes critically. Thus if I do not understand something, I write out a question. It may be answered later in the book or in the lecture. But the question focuses my thinking. When I have time, I try to find the answer. There is no hurry.

State book sources. T-notes include notations on other sources. They are a reference book on that particular topic. Book sources often open doors to answers that could not be found anywhere else.

Summarize the content. You will find a summary very helpful. It may be the author's, your teacher's, or your own. Whatever the source, it pulls together all of the main points. A summary is usually written in sentence form, and may be completed at home after the reading or the lecture.

3.33 WRITE IN SIGNALS.

T-notes use all possible means of recording ideas. And that includes marks, symbols, abbreviations and graphics. You may go Part II, sections 3.1, 3.2, and 4.1 to find more relevant help.

3.34 INSERT KEY-WORDS ON THE LEFT SIDE.

All the foregoing materials were written on the right side of the "T". Only the key-words are written on the left side. Thus the right side is usually three or four times as wide as the left side. Key-words are summary words that help you organize learning and that help recall the main and supporting points. They are words you can remember and that make sense to you. When you review your T-notes, you place the notes on a pile so that only the left side of each page shows. Thus you see only the key-words . If you have made good notes, the key-words will lead your mind to the main points and the supporting points. What some call the 80/20 rule applies here. "...you should spend roughly 80% of your time thinking about the most important 20 percent of the information" (Robinson 1993, 83). An example of T-notes follows in Table 14.

LEARNING CHALLENGES

Use any chapter of this book as basis for the following:

1. Write T-notes on a chapter of this book.
2. In a 300-word essay, write what insights you gained from note-taking.

Table 14. Examples of T-notes

Text:

"No one has ever explained why children are so full of questions outside of school (so that they pester grown-up persons if they get any encouragement), and are conspicuously absent of display of curiosity about the subject matter of school lessons. Reflecting on this striking contrast will throw light upon the question of how far customary school conditions supply a context of experience in which problems naturally suggest themselves. No amount of improvement in the personal technique of the instructor will wholly remedy this state of things. There must be more actual material, more stuff, more appliances, and more opportunities for doing things, before the gap can be removed. And when children are engaged in doing things, and in discussing what arises in the course of their doing, it is found, even with comparatively indifferent modes of instruction, that children's inquiries are spontaneous and numerous, and the proposals of solutions advanced, varied and ingenious" (Dewey 1963, 176, written in 1916).

Topic: Questioning

Key-Words	Main Ideas, Supports, Signals
LACK OF QUESTIONING	Children ask many questions. They ask questions outside of school. They do not ask questions in school.
ARTIFICIAL	School is not related to the children's experience. Thus children have no questions.
DOING THINGS	Children must do more actual things in school. There must be more opportunities for doing things in school.
QUESTIONING	Children will ask questions in school if: They are engaged in doing things. ☆
DISCUSSION	They discuss things they do. They propose varied solutions to problems.

3.4 BUILD MEMORY-MANSIONS.

Did you already forget what was written in the last chapter about T-notes? In that case, read this chapter first and then go back for a step-review. You can remember what you need to remember, if you work systematically at it. Build your memory mansions and furnish them with the things you use. "In general, the best way to build memories is to elaborate a web of connections by aggressive thinking" (Perkins 1993, 84).

BRAINWORK

"...the brain associates bits of information in such a way that we can recall items either on their own or by being 'reminded' of them by a cue....information is stored as a result of two or more biochemical factors coming together in time, at the same instance, and in space, at the same synapse" (Ackerman 1992, 138, 139).

Learning and memorizing are hard to keep apart. What you learn, you need to remember. And your memory serves as a basis for further learning. You learn by association, and you memorize by association. There is much information stored in your memory, but sometimes your recall of that information is slow or poor. Some research has estimated that with different learning we remember as follows:

Table 15. Proportion of Information that is Remembered

Reading	10%
Hearing	20%
Seeing	30%
Hearing and seeing	50%
Saying	70%
Saying and doing	90%

The above estimated figures are powerful arguments for the use of audiovisuals, learning by doing, and learning by teaching team-members. These concepts will be presented later in this book.

You and I have at least three types of memories. First, we have a short-term memory. Most of the things we see and hear are lost to us within seconds and minutes. The things we keep using, we first put into our second memory, namely the working memory. This section deals mainly with how to get things from our working memory into our third memory, the long-term memory.

3.41 INDEX (ENCODE) INFORMATION.

Use your best intelligences. In Part III of this book you may discover that you have more than one area of high intelligence. The more intelligences you use to remember, the better you will remember. You may learn best by hearing. Most people learn better by both hearing and seeing. They learn best by performing a skill and actually teaching it to others. Be imaginative. Use your best intelligences.

Associate ideas. Eventually, everything in your brain should make sense and fit together. You associate the new with the old. You already know much, so adding something new to material that you are already familiar with is not so difficult. For example, I knew Korean and began learning Japanese. There are similarities between the two languages. So in my mind, I just learned Japanese on the same mind-tape on which I already had Korean. I associated Japanese expressions with Korean ones. The association of languages worked for me. It also works well with associating words with pictures.

Flag key-words. You learned all about key-words in the last chapter. Use them to organize your thinking and your memory. They simplify learning by providing handles by which you can later recall the information.

Store your memories in 10 mansions, 100 rooms, 1,000 closets, 10,000 drawers. My memory estate has ten mansions. You can design yours in any way you want, but bear with me as I describe my memory mansions. Actually, I now occupy only five mansions. The other five stand empty. Give me time, I will occupy them later. My five mansions are called 1) temple, 2) home, 3) health resort, 4) college, and 5) storage. Each mansion represents a big part of my life. Your priorities may be different, and thus you can use your memory mansions for different purposes.

Store your memories in 100 rooms. The memory mansions are divided into rooms . Each mansion has ten rooms, and the first five rooms of my mansions are:

*1. persons (biography)
*2. products (varied)
*3. times (history)
*4. places (geography) and
*5. reasons/values (philosophy).

The five room names come from the system-questions, namely Who and What, When and Where, and Why. The "*" is for the mansion number, so the number of Room 1 in Mansion 1 (temple) is 11, followed by 21 in Mansion 2 (home), 31 in Mansion 3 (resort) and so on. The same system then extends to the 1,000 closets and the 10,000 drawers. You just store things and ideas where they belong. When you need them, you can find them. Memory mansions are a personal filing or classification system for memories.

3.42 USE MEMORY-MANSION HELPS (RE...).

All the following five memory help-groups start with the prefix "re," which means "again". My dictionary lists over 300 words that start with this prefix. Notice how I am using some of these words in this section. The five memory help-groups relate to the mind and thought (remind), the eyes and writing (review), the voice and talking (recite), the hands and doing (rehearse), and the feet and placing things (replace).

ReMIND yourself about what you THOUGHT before. You do this by reminiscing about past events, by recollecting where you have been. Everything that you experienced should fit into one of your memory-mansions. There is a permanent memory-place for all that happens to you.

* CHUNKING. The brain remembers bits of up to seven digits quite well. Over that number, recall becomes more difficult. I chop lists into units of four to seven, and four if at all possible. I want to make it easy for you to remember all that is presented here.

* RELEARN. You have had a busy day. In the evening you just relax and reminisce about what you did throughout the day. Or you sit by the lake and think about the last time you were there. In your mind you go over what you have seen and learned in the past hours. In this way, you repeat what happened and improve your brain-connections.

ReVIEW what you WROTE before. You reread what you have written in the past, your old notes reappear in front of the eyes of your mind. Memory-mansion have signs above the doors. As you read them, you remember where you have been before.

* ACRONYMS. You may have found that one of the simplest ways to remember things is to remember acronyms, or the first letter of each word in a phrase. For example, the word "homes" can remind you of the great lakes: Huron, Ontario, Michigan, Erie, and Superior. The first letters of these names spell "homes". Or take the sentence: "My very educated mother just served us nine pizzas." The first letter of each word gives a clue to the names of the planets around our sun. The planets, in order, are Mercury, Venus, Earth, Mars , Jupiter, Saturn, Uranus, Neptune and Pluto (DePorter 1992, 237). And then there is ABCDEF, which stands for the things I pack for my trips: Articles of toiletry, Books, Clothing, Documents, Electrical things, and Food.

* CALENDARS. You write on your calendar many of your plans and appointments. Thus you have a record of your history. I have kept my office calendars for the last ten years. They have been a very useful aid to find events, names, and even telephone numbers.

* CLOCKS. Another memory help that reminds me when to get up is my alarm-clock. My watch helps me keep appointments.

* MEMOS. You may write your memos as do-lists on little pieces of paper and lose them. I write my memos in my pocket notebook and office calendar. Thus I do not lose them. And I am reminded about what I am to do.

* AUDIOVISUALS. You remember pictures better than written words. Draw a picture of what you want to remember. I use audiovisuals extensively. Even when I close my eyes, the diagram I saw three weeks ago is still there. Time-lines are particularly useful in remembering history.

* A-Z SEARCHES. At times you may recall something by just going from "A" to "Z" to see if the first letter triggers recall of the name or thing. It takes time, but it works.

ReCITE what you SAID before. You retell the story of your life, you recall past experiences. Do not read silently all the signs on your memory-mansions, call them out, shout them.

* RHYMES. Lists that rhyme are easier to remember. They become familiar. And they stay with you. The first line of the rhyme seems to call forth the next.

* SONGS. The emotional aspects of music help you remember. The words may rhyme, or the music itself may suggest the next phrase.

* PEG-WORDS. The peg-word system assigns a word to each number from one to ten. For example, one is bun, two is shoe, three is tree, four is door, five is hive, six is sticks, seven is heaven, eight is plate, nine is wine and ten is hen (Rose 1985, 57). You noticed that all the words rhyme with the numbers for easier memorization. The idea then is to associate a number with a picture made up of the associated peg-words. For example, 1932 would be a bun on which there stands a wine glass in which is a tree with a shoe on its end. That is a rather absurd picture, but peg-word association thrives on strange graphics. Draw in the pictures in Figure 9.

* STORIES. The more often you retell what happened, the better you will remember. It has been suggested that small children cannot remember their first years because they cannot retell their early life events. So when you come home, tell someone what happened. Share what you have learned. It helps you remember.

ReHEARSE what you DID before. You redo what you did many times before, you reuse the things you used before. Relive your joys and sorrows in each of your memory-mansions.

* PATTERNS. Fit your new learning into old patterns. There is a connection somewhere, and if you find it, it will stay with you.

Instruction: Draw the ten peg-words and the picture for 1932.

1. BUN..
2. SHOE...
3. TREE...
4. DOOR...
5. HIVE...
6. STICKS...
7. HEAVEN...
8. PLATE..
9. WINE...
10. HEN..

1932...

Fig. 9. The Peg-word Memory System

* PRACTICE. I regularly cook bean-sprout soup. Having done so some thirty times, I know exactly what goes into the soup to make it

match my taste. I have baked thousands of loaves of bread. By now I know the recipe. I remember.

RePLACE things where you PLACED them before. You recheck where you have been, you research the cities you plan to visit. Walk back and forth through your memory-mansions and enjoy the reminders of your history and learning outcomes (Henricks 1993, 29-34).

* MAP-PLACE. Put everything in its place. This is why you build the memory-mansions. When you come home, place your keys in a glass tray near the door. This way they will always be there when you plan to leave home. If you place them some other place temporarily, you will forget. Have a permanent assigned place for everything. This goes not only for keys, but also for books, notes, papers, and information. Remember the location of the things you learn. You may recall them by their location.

* MAP-WALK. You can combine peg-words with your map-places and mentally walk where you plan to go. Notice all the unusual things along the way. The more unusual the places are, the better you will remember. In your mind, you can walk through Africa and remember all the countries you cross. You can meander through a zoo and remember all the animals you met.

3.43 PROVIDE EMOTIONAL SUPPORT.

Immerse yourself. The more you are emotionally immersed in an experience, the more likely you will remember the event or the related information. I remember clearly where I was when I received the telegram that told me that my father had died.

Team up for fellowship. Teamwork improves emotional support and thus memorizing. When you feel good about being with others, you erase many fears and anxieties. "We can do it" is the spirit of the team.

Demonstrate a positive attitude. If you think you will fail and forget things, you surely will. This is somewhat of a self-fulfilling prophecy. You may have to work hard to keep a positive attitude. You may need some help. But the effort is worth while. Brighten up, the best is yet to come.

Enjoy the satisfaction of nearing the end. The closer you come to your objective, the better you can feel about it. You can anticipate success. This too helps carry you through.

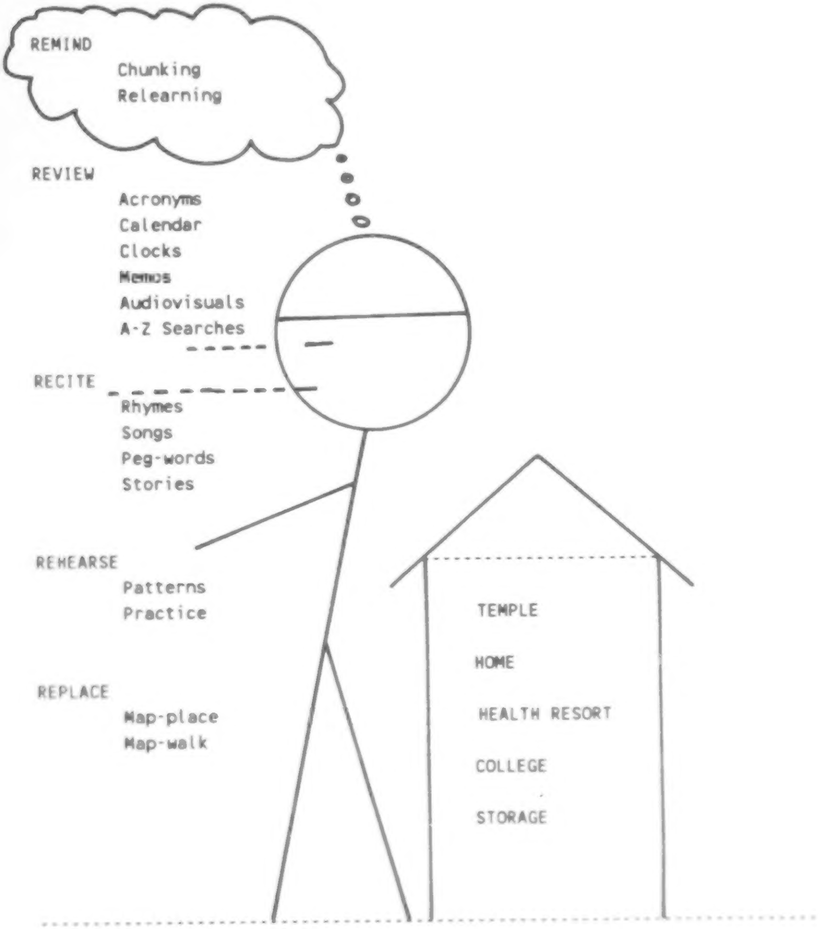

REMIND
Chunking
Relearning
REVIEW
Acronyms
Calendar
Clocks
Memos
Audiovisuals
A-Z Searches
RECITE
Rhymes
Songs
Peg-words
Stories
REHEARSE
Patterns
Practice
REPLACE
Map-place
Map-walk
TEMPLE
HOME
HEALTH RESORT
COLLEGE
STORAGE

Fig. 10. The Re-member Framework

3.44 RETRIEVE (DECODE) INFORMATION.

Identify the category. Your brain needs to know what you want to extract from memory. If you look through the memory mansions and find all neatly in place and in categories, decoding is not so hard.

Use and practice recall. Your memory develops with usage. The more you call on it, the better it gets. If you do not use it, you lose it. Some older people may have difficulty here, but the memories of other senior citizens are as good as ever.

Review regularly. The more you review, especially in the first two months of studying, the deeper the brain connection becomes. Look up Chapter 5.1 on step-reviews.

Apply your skills in new situations. The best way to assure that you will not forget something is to use the memory items and weave them into many current and recurring events. For example, I have adapted and organized Kohlberg's (1981) developmental stages into motivational levels and used them in scores of different situations. I can remember them easily, because the acronym is ABCDE. They are in short form: Avoidance of pain, Benefits, Conformity, Duty, and Ethical principles.

LEARNING CHALLENGES

Use this book as basis for the following.

1. Memorize five paragraphs of your choice, using one or more of the memory helps.

2. Use each of the memory helps to memorize a sentence.

4. CONTRIBUTE TO MACRO-LEARNING PROJECTS.

4. MACRO-LEARNING

So far, you have managed very well. In the previous sections, you immersed yourself in micro-learning. Now you may feel that you really have a grasp of the subject at hand. Not really. Read on. There is more, much more. Forgive me, I would like to make it simpler if I could, but I did not program your brain, neither did I write your history textbook.

So what is macro-learning? You guessed it: "If micro-learning goes into the details, macro-learning must deal with the whole and the application of all these little parts." You see, all these micro-parts do not make sense by themselves. They have to fit together. They have to undergo synthesis. There must be a framework on which they all hang in some order. When you finished micro-learning, you were saying: "So what? What value is in this? Why am I learning this?" When you are through with macro-learning, you should say: "Ah, now I see."

Your brain is a pattern-seeking organ. It tries to organize the things you learn so that they make sense, and so that you can later use them. You may have a great amount of papers in your filing cabinet, but if you can never find them when you need them, they are of little use. When I started writing this book, I first organized all of my materials so that I could locate what I needed right away. In a similar way, macro-learning organizes your learning.

You can help your brain develop the patterns that make for success. The brain does not find most patterns on its own or without training. You can assist. And you help by using macro-learning skills. The more you use them, the easier it will be for your brain to find relevant patterns. Often you ask yourself, "Where does this fit in?" If you know the structure, you will find the spaces where this or that fact belongs.

Few trainees and students have the thought-background to find macro-learning easy. They are used to factual micro-learning. Macro-learning requires higher thought forms for which many learners are not prepared. You may have to go over this chapter two or three times. Macro-learning is especially needed in planning and leadership, where all the various parts have to fit together in one set of documents or relationships.

4.1 CHART BOX-GRAPHICS.

I like to stand back and watch a tree from all directions, to lie underneath it, and to climb in its branches. I feel its bark, I taste its leaves. Then the tree becomes my friend. The trunk holds everything together. Reaching out from the trunk are the branches, and from them the twigs. I find it easy to put that picture as a box-graphic on paper Box-graphics include, among other items, semantic maps and diagrams. They help you to:

* Organize information and ideas,
* Generate new ideas,
* Elaborate on ideas,
* Represent abstract or implicit concepts in more concrete and explicit form,
* Illustrate the relationship between and among concepts,
* Relate new information to prior knowledge,
* Store and retrieve information,
* Assess thinking and learning (Davidson and Worsham 1992, 183).

BRAINWORK

"The objective of brain-based learning is to find ways to help students have experiences that are similar in complexity, challenge, and creativity to those of creative experts. Learning this way will always involve a combination of information that is given with a restructuring that is both creative and personally meaningful. Creating these rich maps takes time (Craine and Craine 1991, 109).

Box-graphics help you restructure information into rich maps that are both creative and personally meaningful (Buzan 1989, 77-138). That is why your box-graphics may make a lot of sense to you and not to everybody else. The illustration comes from your experience and relates well to it. Box-graphics, without doubt, are often complex, always challenging, and many times creative. While most of them are two-dimensional, the best ones to remember are three-dimensional. Box-graphics are visuals and thus also relate to Chapter 2.2 on audio-visual-quests.

4.11 SELECT BOX-GRAPHICS.

Sketch graphic organizers. You are well acquainted with outlines. Graphic organizers are outlines in picture form. They may be very simple, consisting only of several circles and arrows, or they may be quite complex. Let your imagination be your guide in rearranging the data before you. Graphic organizers, to be effective, present written or spoken content in an organized and memorable way. Besides the ones shown below, there are many others. Figure 11 present 24 examples of box-graphics.

Make charts. I must admit that charts are just another type of graphic organizer. But since the term "graphic organizer" is new and the word "charts" goes back to the earliest seamen, I keep them separate. You will recall that navigators use charts. These are actually sea-maps. Charts put things into neat boxes. Charts differ by the relationship of the boxes. Since they have been around a long time, you may be more familiar with them. But even so, you most likely do not use them for your learning. This is why I include them here. In QLearn, I try to bring together any skill that I have, or can develop, to maximize my learning.

Explore T-charts, diagrams and maps. I have too many types of charts to fit into one category. Indeed, I have found that T-charts are special box-graphics. You will recall that I use T-charts for note-taking. Your creativity is the only limit to the varieties of T-charts. The most common is the one in which you place the advantages "+" on the left side and the disadvantages "-" on the right side. Then it is easy to compare and come up with a conclusion. In the review in Part III, I do this with QLearn and mislearning. Of course, QLearn wins. What do you expect? Then there are many types of diagrams. Maps can deal with the physical, political, or economic aspects of localities.

98

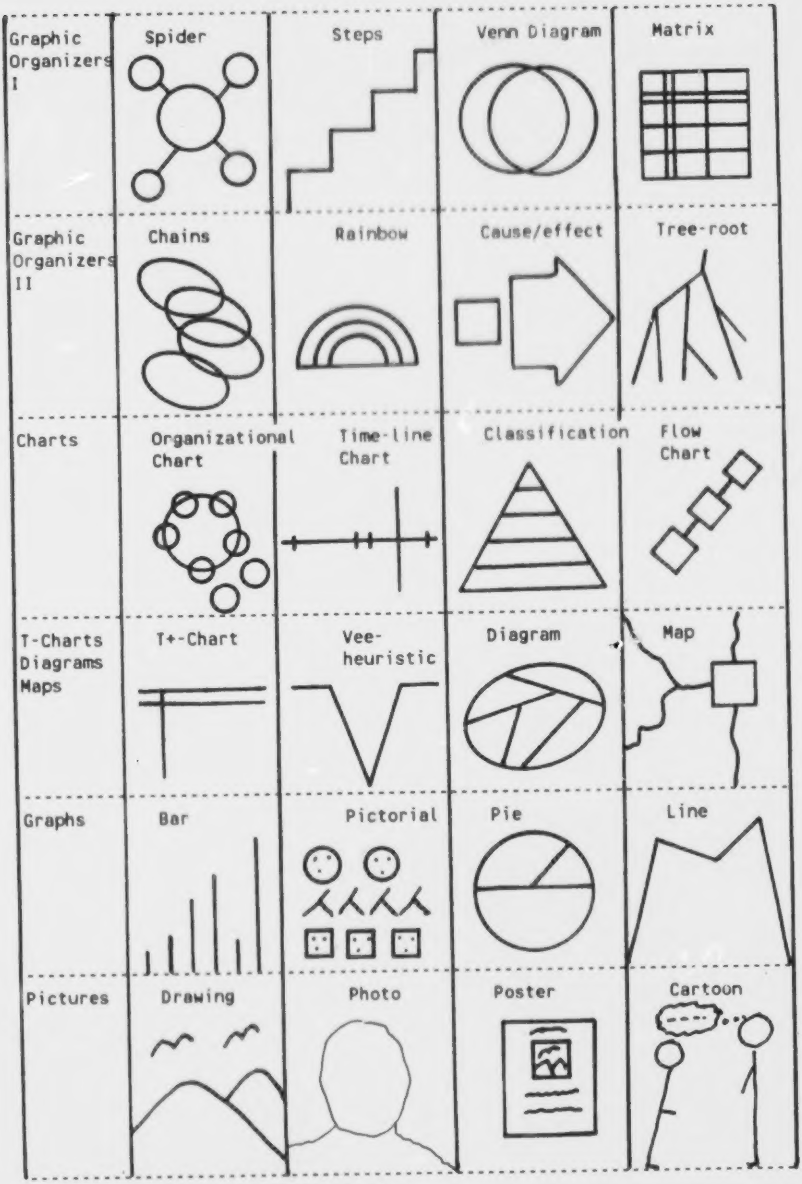

Graphic Organizers I
Spider
Steps
Venn Diagram
Matrix
Graphic Organizers II
Chains
Rainbow
Cause/effect
Tree-root
Charts
Organizational Chart
Time-line Chart
Classification
Flow Chart
T-Charts Diagrams Maps
T+-Chart
Vee-heuristic
Diagram
Map
Graphs
Bar
Pictorial
Pie
Line
Pictures
Drawing
Photo
Poster
Cartoon

Fig. 11. Examples of Box-graphics

Construct graphs. Graphs usually deal with numbers. You can draw a simple chart or table and present the data. In that form, the data are not so vivid and memorable. If you construct a graph, the relationships and the changes over time become very distinct.

Draw pictures. I like pictures. I can remember pictures much better then long paragraphs. A Chinese proverb states that a picture is worth ten thousand words. The Chinese were right in this. Your picture may be simple. If you can draw or copy a circle, you can make box-graphics. If you cannot draw well, use your camera. Or cut out a photocopy. You will find that pictures capture some emotions of the instant that facilitate memory.

4.12 DRAW CONNECTIONS.

Box people, things and concepts. In most box-graphics, people, things or concepts are in some type of box or in an assigned space. I first try to find the central person, thing or concept and place it in the most prominent space. You remember the differentiation between main points and supporting points. Well, this is the same thing, only in graphic form.

Make differentiations. Once you have differentiated between the main points and supporting points, you can also differentiate this relationship in the graphic presentation by size, shape or location. Surround the main point by a larger circle than the supporting points.

Show relationships. In most graphics, I can draw lines or arrows to show relationships. In some, the relationship is shown by position, shape, size or numbers.

Write labels. You know what the box-graphic means when you develop it, but you may forget later on. Also, one of the audiovisual rules is to reinforce pictures and graphics with words. So label all the boxes and lines. These label-words are key-words that help you start remembering as you use the graphic.

4.13 EDIT YOUR GRAPHICS.

Review the source of the concepts. I have often developed a box-graphic and then found out that while it was an interesting picture, it did not tell the story I intended it to tell. So do not get carried away. Stay with your source, unless you are developing a creative box-graphic. And there is a place for that too, but usually not in history.

Redraw and redraw again. I may not be so good at box-graphics, because I find that I usually draw three or four of them before I am satisfied. Usually, I use more than one approach. Often, I use more than one type. Since I aim for quality and the best possible way to organize my thinking, I feel that the time is well invested.

Choose the best graphic. I have four graphics before me, all illustrating the same concept. In some cases, my choice for the best one is very simple. For I have drawn the box-graphics from a very simple and messy sketch and ended up with a well-organized chart. So I choose the last. But often, all graphics are satisfactory. Then I go with the one that speaks most to both my mind and my heart, the one I will be able to remember the best. At times, I use two or three box-graphics, because they approach the same concept from different perspectives and all the perspectives may be valid.

Check for validity and reliability. Does the box-graphic do what it says it does? If it does, you have validity. You see, a box-graphic is a piece of information in the same way that a research report or an essay is. So my quality standards require me to make sure that I am not digressing from the theme when I translate words into pictures. I may see the meaning of the box-graphic, but your teacher or others may not understand it. If you plan to present it in a test or paper, you may want to make sure that it is reliable. That is, does it always (to most everyone) do what it says it does? If it looks like a cloud to one and like a mushroom to another, it may be interesting to psychologists, but not as a box-graphic to a group of learners.

4.14 EXPLAIN YOUR BOX-GRAPHIC.

Describe and summarize. While your box-graphic tells a story through lines, it also is the basis for verbal explanations. You have to guide yourself and others through the maze to come to the exit. You should be able to describe the relationships, for by describing the way it flows, you visualize it and you learn. A good summary can bring together the main points into a short statement.

Use examples. My box-graphics are only as good as they are useful. That is, if they are not practical in helping me learn, they are useless. To test their usefulness, take a life example or case, and walk through the box-graphic. Instead of "person" write "Joe". Then test your graphic. If two or three examples do not make sense, modify them to fit your needs.

Support with evidence and sources. Usually you will base your box-graphic on some given evidence or a source. At times, you will have to find support for your creatively developed box-graphics. Then you follow the steps in the book-probe module in Chapter 2.1.

Participate in your graphic. You should be able to interact with graphics. One way is by questioning. I have never developed a box-graphic that did not raise some questions. If you answered all questions with your box-graphic, your creation is too complex. So when you look at your chart a week later, it is quite all right to ask: "Now what does this concept lead to?" Or any other question. Other forms of participation with graphics may be the filling in of blanks in a chart, the timed removing of covers, the manipulation of parts of a picture, and the explaining of a graph with the help of a life example.

LEARNING CHALLENGES

Use the content of a selected page as basis for the following:

1. Draw 24 appropriate box-graphics, one of each type.
2. Describe each in one or more five-sentence paragraphs.

4.2 SOLVE CASE-PROBLEMS.

Many of your assignments are presented as problems. And life itself constantly presents you with problems. You ask, "Where will I spend the next year?" and you go on to solve the problem. That is what smart people do.

BRAINWORK

"Students...may try to explain it to themselves as they go along, answering questions such as 'Why did the author say that?' or 'How does this step follow from the previous one?'...students who engage in self-explanation--either spontaneously or because they are prompted to--are much more able to solve later problems that require understanding" (Perkins 1993, 84).

Case-problems are not just mental exercises. They may include laboratory experiments and assignments, projects, and field-work activities. They are influenced, among other things, by the feelings that surround the case and the objectives of the people involved. The earlier and more extensively we solve selected problems, the happier we are. Leaving problems unsolved makes us not only mislearners, but it can slowly kill our brain-cells.

4.21 DEVELOP DEFINITIONS (OF PROBLEM).

Expect an outcome (objective, L1-3). "I have a problem." This statement usually means that I am looking for a solution. I expect results. Otherwise I am not really dealing with a problem. What I thought was a problem, may be just an inconvenience that I may have to live with. A problem, at least in my mind, calls for a solution, just like a question demands an answer. And in many ways, what we learned in system-questions applies here, too. Also review Chapter 1.2 on L-O Objectives.

Use descriptive language. Only a clearly stated problem leads efficiently to a solution. So use accurate language when writing a problem statement. And it needs to be written out. Keeping it in your head is not sufficient.

Give details. I write out my problem statement so that there cannot be a mistake about what troubles me. That requires an attention to detail. If the problem is fuzzy, the conclusion will be even fuzzier.

Lead toward a solution. Your problem statement can actually invite you to find a solution. This is why I like to write it in the form of a question. For example: "How can I buy the best computer for my present needs?" I do the same with research problems. Questions naturally call for answers. Questioning is deeply embedded in our brains. So I take advantage of these brain-ruts.

4.22 GENERATE OPTIONS.

Consider all possible actions to produce the desired result. The more options I consider, the more likely I am to find the best solution. At times, I feel that there is no way out, that there are no options. After some creative thinking, however, I always come up with a few alternatives.

Note the context. Options grow out of the larger circle that surrounds the problem. Buried somewhere in that arena are solutions. As I explore the context of a problem, possible options suggest themselves. The more I walk around the problem and see it from many perspectives, the more options arise.

Do research. Some options shout to be recognized, others I have to search for and dig out. This may take some effort. If it is an important problem, this may warrant some library research to find out how other people have solved similar problems. Remember, you are not the first person to face this situation.

Brainstorm options. You may want to sit down with some of your friends and write down every possible option that comes to mind. Some options will be nearly impossible, others absurd, but do not stop to criticize and evaluate them. If you do, you stop the flow of the creative juices that will bring forth further options. In the end, only the most appropriate options will be analyzed in depth. So writing down the far-out ones does no harm. They may even do some good by suggesting very good options.

4.23 DESCRIBE THE OPTIONS.

Give positives (P or +). I usually analyze the four to six main options in depth. I make detailed notes about them. Some are so obviously impossible that a visual analysis suffices. Each listed option has some claim to being a solution to the problem. I need to write out these claims. What makes me think that this option presents the solution?

Present minuses (M or -). Most options, I have discovered, also have some weaknesses. To explore and list these weaknesses is just as important as to note their strengths. Most of the time it is the balance between the pluses and the minuses that serves as the basis for selection (deBono 1985).

Add interesting factors (i). At times there are other interesting features that give an option a real claim to being a solution. These matters are neither advantages or disadvantages, but just interesting and unusual characteristics.

Show short-term (=) and long-term consequences (==). Since people search for a solution, the consequences of the proposed action must match the intended problem-question. The short-term consequences may match, but the long-term consequences may not. Both consequences must match for the selected option to be a viable one.

4.24 MAKE DECISION (CHOOSE BEST OPTION).

Evaluate options by ranking them. The above information gives me a basis for ranking options. I may assign points to each option based on various descriptions, or I may do it visually. The option that most closely meets the desired characteristics of the solution is ranked the highest (5), and so on down to the lowest (1).

Choose on the basis of the problem statement. I look at the three highest options and reevaluate them. I check them again against the problem. The one that best meets the requirements of the problem is then designated as the proposed solution. Only time can tell if the choice was satisfactory.

Select on the basis of external criteria. Sometimes I will use a list of external criteria to rank options. I assign points for each characteristic. Then I add them together and the one with the highest number is the best option.

Decide on the basis of personal opinion. At other times, I decide the best option on a basis of an overall impression, my personal experience, prayer, or my opinion. Not all problems can be solved mathematically. The heart has a place here too. An example of a case-problem is given in Table 16. The descriptions were explained in section 4.23.

Table 16. Example of Case-Problem

CASE: Joe lives next door to Jim. They do many things together. But they are very different from each other and have backgrounds that are in no way similar. How is Joe to relate to Jim?

DEFINITION	OPTIONS	DESCRIPTIONS + - i = ==	DECISION
WHAT RELATIONSHIP SHOULD JOE HAVE WITH JIM?	1. Deny differences	+ accept barrier - isolated == trouble	
	2. Accept differences	+ adjust to d. - problems i learning == reality	
	3. Adapt to differences	+ interaction - problems i personal change == growth	V
	4. Integrate differences	+ enriched - corners rounded i insight == unity	

LEARNING CHALLENGES

Case: You are assigned to give a 50-minute presentation on how adults can use brain-friendly learning.

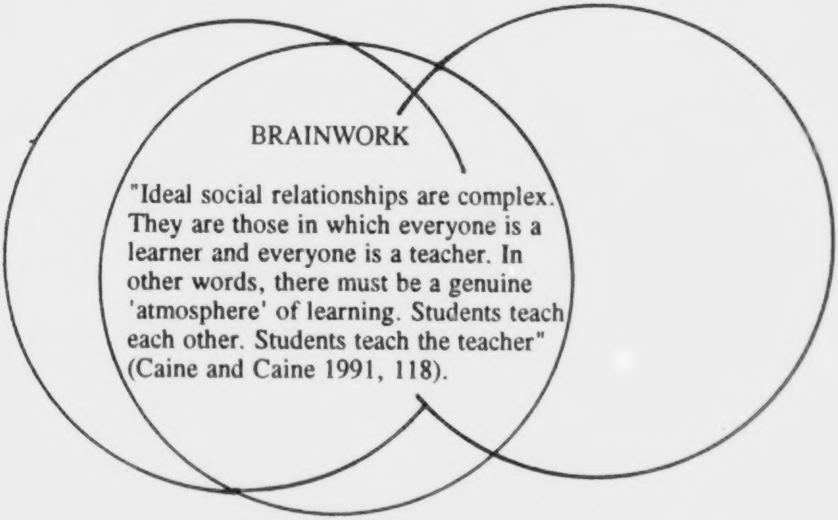
1. Use the case-problem approach to develop plans and materials.
2. Write out all that you and the participants will do for the first and last five minutes
3. What would you do in each of the following situations? (Use the case-problem method to arrive at a conclusion.)

   a. You see someone defacing a public statue.
   b. You find out that someone has stolen something.
   c. You know that a friend regularly kicks/whips his dog.
   d. A friend tells you that she was molested by one of her parents.
   e. A friend constantly brags about himself.

(adapted from Baker 1989, 5-19)

4.3 SHARE TEAM-TASKS.

No man is an island; but you sit alone, study alone and write projects alone. Then you wonder why you have difficulties working with people. I invite you to explore this chapter with an open mind. If you can, I urge you to use the team-task approach in much of your learning. While I present it here as just another module, it needs special consideration. The QLearn model from an academic perspective (Klimes 1993) deals with teamwork as one of the three essentials. In this volume, I have tried to integrate QLearn Brainwork and Stepwork so that learners can use them easily. Emphasizing teamwork in this volume would have made it too complex. But as you have the opportunity, bring team-tasks into your learning. In your case, it may just make the difference between QLearn and mislearning.



"Ideal social relationships are complex. They are those in which everyone is a learner and everyone is a teacher. In other words, there must be a genuine 'atmosphere' of learning. Students teach each other. Students teach the teacher" (Caine and Caine 1991, 118).

I am a student, and I am a professor. I must be a daily learner to be an effective teacher. That is why this book is as important for teachers as it is for students. The best learning takes place when learners and teachers gather to learn together. The writings of Corey and Corey (1987) and Yalom (1985) provide good background for an understanding of groups.

Team-tasks are somewhat related to the cooperative learning movement. The four main models of cooperative learning are those developed by Johnson and Johnson (1990), Kagan (1992), Sharan (1980), and Slavin (1983). The positive outcomes of teamwork are higher academic achievement (in 63% of reviewed studies), improved social development, and improved ethnic relationships. Teamwork was effective because of its peer-tutoring elements, increased time-on-task and practice, and improved team support that decreased anxiety (Kagan 1992). In team-tasks, there are three stages:

First is the...............I, ...the individual.
Then are the............WE, ...the team.
The team focuses on....IT, ...the team-tasks.

Cooperative learning is based on four principles. These principles deal with distributed leadership, positive interdependence, social skill acquisition, and group autonomy (based on Dishon and O'Leary 1984, 9, 10).

Some learners find learning difficult because of personal or attitudinal problems. Other students are unmotivated. For these learners, peer group support, peer counseling, or professional educational counseling may be helpful.

4.31 SELECT A LEARNING TEAM.

Consider the membership. You can work with some people, but you have difficulty working with others. You must, therefore, be careful who joins your learning team. Actually, you may want to do your learning alone. For some, that is the best way. But team learning has its advantages. Teams not only motivate you, but they also prepare you for the life of work where you will most likely have to work together with others. At the least, your teacher, if you have one, could be a team member. You could relate to him or her as your partner in learning. That does not mean that your teacher will come to your house at night to help you. Fellow-students make the usual team members.

Select the leadership. You can have a leaderless group, where each team member takes some part of the leadership as needed. Or one member can take the leadership and guide the group. Be sure that the leader does not dominate the group so that you stop learning by yourself and just start repeating answers. Remember, learning is your responsibility, and you cannot delegate that responsibility to anyone, be it a teacher or a team leader. You are still in charge of your own learning.

Choose homogeneous or heterogeneous grouping. You can choose people who are very similar to you for your group. This way you will feel more comfortable and get down to technical details faster. Or you may choose people who are very different from you for your group. That way you learn more about social relations and interaction. If the latter is not your aim, stick with learners who are similar to you. And of the same sex.

Form groups (of 12), teams (of 6), pairs (of 2). Often, a pair of learners can help each other to learn. But for some projects, teams of up to six, or groups of up to twelve are also appropriate. More than twelve learners are harder to handle and there are too many possible relationships to be useful for in-depth group learning. I feel that normal classes should not be over thirty, for after that the teacher needs to use mass-communication skills that take much preparation and experience. Most teachers cannot teach large groups successfully, usually because they do not have the time or skills to prepare well for the needed type of communication.

4.32 BUILD LEARNING RELATIONSHIPS.

Consider physical and cultural differences. Even in homogeneous grouping, there will be differences. You can deny the differences, or you can reject them, accept them, adapt to them, or integrate them appropriately into your life. These differences may be differences of age, communication patterns, race, intelligence, residence, central concerns, or personality (Casse 1981, 3-50). Cultural differences may relate to time orientation, importance of status, dualistic outlook, or emphasis on planning and openness.

Relate to differences fairly. You may have some prejudices that hinder you from taking people of a different background at their full value. It is easy to feel superior or inferior and to discount or inflate the worth of others. That makes for problems. You and I want to be treated fairly based on who we are, not on the basis of someone's bad experience of the past.

Communicate openly. The Johari Window (Luft and Ingham 1955), as shown in Figure 12, is a matrix with four windows, namely open, hidden, blind and unknown. What is known to yourself and to others is in the open. Openness makes for good communication. You tend to try to hide things not known to others. If you hide too much, you make learning difficult for yourself. And in some areas you are blind to your mistakes and weaknesses. The blinder you are to your mislearning, the more you will mislearn. Lighten up and open up to new possibilities, will you?

	Known to Self	Not Known to Self
Known to Others	OPEN	BLIND
Not Known to Others	HIDDEN	UNKNOWN

Fig. 12. Johari Window

Support others through selective acceptance. I need support in my learning, and so do you. Teams provide some of that support. But this support cannot be thoughtless and uncritical. I cannot support you in your mislearning. I will help you, and I will support you in QLearn.

4.33 DESIGN TEAM-TASKS.

Do assignments. Teams do not just sit around feeling good. Learning teams are organized to get a job done, to bring about results.

Thus every learning session has a clear end in view. It focuses on learning outcomes.

Divide the tasks. One way to work in teams is by dividing the task so that each member takes part of the load. Then each member teaches the others what he or she has learned. The task is broken down into parts that are manageable.

Share activities. A group of people sitting together does not make a team. Two individuals doing their assignments in the same room are not a team. There has to be "give and take," exchanges and cooperation. A team cannot function well without sharing and open communication.

Monitor progress. I find it helpful to stop at least every half hour to stretch and to monitor my progress. Periodically, I have to look up and see the whole picture, even when most of my task is concerned with small details. I look up and see the mileposts pass by. This encourages me. We are nearing home. My team and I have nearly reached the objective for today.

4.34 EXECUTE TEAM-SKILLS.

Use social team-skills. You will use two types of team-skills, namely learning team-skills and social team-skills. Since all regular learning skills are used in teams, I will present here only the social team-skills. There are two types of social team-skills. First, the social task skills are, among others, sharing ideas, checking for understanding, keeping track of time, and following instructions. The social maintenance skills include encouraging others, addressing group members by name, checking for agreement, sharing feelings, and responding to ideas (Dishon and O'Leary 1984, 27, 57). For example, in the mutual interview, one person interviews, or reviews, while another takes notes. Then the two switch sides and continue. Thus the members check for understanding.

Use think-aloud. In think-aloud, you talk things out. Instead of considering a written problem, you share your thoughts with your partner. Your partner should be uncritical and make notes. He should not stop your flow of thoughts, unless you go on and on. Often it is easier to talk things out than to write them yourself.

Use think/pair/share. This assignment asks you to think about a topic. Each person first sits alone and makes notes on what he or she is thinking. Then partners pair up and share their insight and notes with each other. The two also may later share their joint thoughts with a larger group.

Use pair practice. In pair practice, one person recites while the other listens and later makes corrections. Then they switch sides while the other person demonstrates his or her skills and the first person monitors the accuracy and correctness of the other person's presentation. Examples of the steps in various team-skills are presented in Table 17.

Table 17. Examples of Team-skills

		A	B	C
MUTUAL PAIR INTERVIEW	○ ○	A interviews B A writes notes	B interviews A B writes notes	Both share insights
THINK ALOUD	○ ○	A talks out the problem	B gives cues and questions	Both reach conclusion
THINK/PAIR SHARE	○ ○	Both think about problem	Both share with each other	Both share with others
PAIR PRACTICE	○ ○	A reviews B A checks B	B reviews A B checks A	Both review mistakes

RELATIONSHIP MAPPING

Learning-relationships, or any relationships, may be mapped with a special system of box-graphics. This mapping, as shown in Figures 13 and 14, helps participants clarify their relationships to others in a team or family. Once the relationships are described, and the mapping shows relational problems, an effort can be made to improve or change the relationships. Various symbols are presented below.

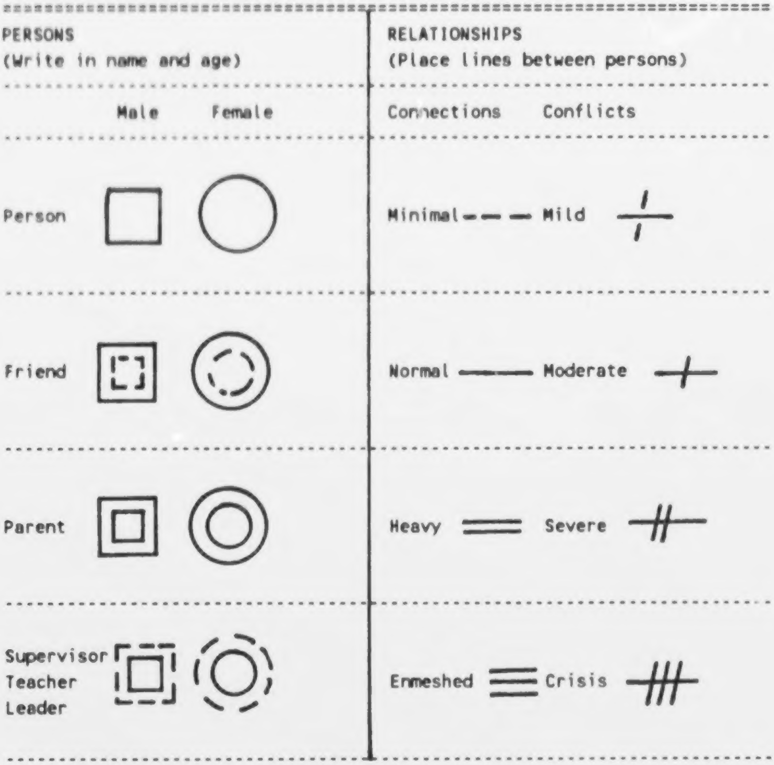

PERSONS
(Write in name and age)
Male
Female
Person
Friend
Parent
Supervisor
Teacher
Leader
RELATIONSHIPS
(Place lines between persons)
Connections
Conflicts
Minimal
Mild
Normal
Moderate
Heavy
Severe
Enmeshed
Crisis

Fig. 13. Relationship Mapping Symbols

CASE:

A study-team consists of three friends named Bill, Joe and Tom. Bill and Joe are aged 18, Tom is 17. Joe is the coordinator of the group. Bill and Tom are best friends. They both get along quite well with Joe, but every so often there are some problems between Bill and Joe.

ASSIGNMENT: Map this relationship from Bill's perspective.

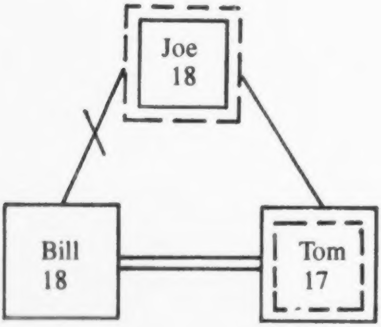


Fig. 14. Example of Relationship Mapping.

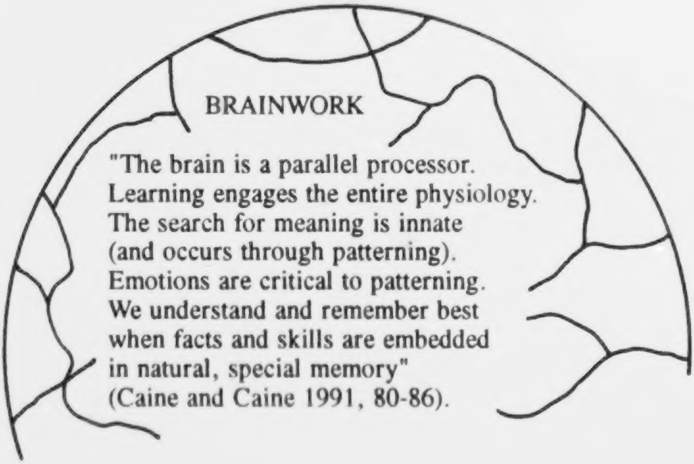
LEARNING CHALLENGES

Use this chapter (4.3) as basis for the following:

1. Design and describe three appropriate team-learning plans.
2. Write on one page what you have learned from the above.
3. Produce a relationship map for your learning-team or family.

4.4 WRITE THEME-REPORTS.

I learn much from others, but in a sense I learn most when I process ideas and start writing. Once something is on paper, it is permanent and can be examined and evaluated. I sometimes say things that are, on examination, inaccurate and get by with it. Not so with writing. In writing, I bare my soul and everyone who reads knows who I am. That is a bit scary. But it is instructive.



BRAINWORK

"The brain is a parallel processor.
Learning engages the entire physiology.
The search for meaning is innate
(and occurs through patterning).
Emotions are critical to patterning.
We understand and remember best
when facts and skills are embedded
in natural, special memory"
(Caine and Caine 1991, 80-86).

You learn with all your senses, with your hands and feet, with your entire physiology. Often you learn much with your pen. Theme-reports are opportunities to embed your learning in the long-term memory of the written pages. In preparing a quality theme-report, you are asked to use all the available facts and all your skills (Ross-Larson 1982, 3-43).

I present here ten suggestions for good theme-report writing:

1. Outline: Give main and supporting points.
2. Paragraphs: Make each a self-contained unit.
3. Abbreviations: Keep them to a minimum.
4. Definitions: Use them with all important terms.
5. Evidence: Support all statements with arguments.
6. Voice: Write mainly in the active voice.

7. Quotations: Use them only to support arguments.
8. Rhetorical questions: Avoid rhetorical questions.
9. Verb tense: Write in the past tense.*
10. Rewrite: The first draft is usually not good enough.

* I wrote this in the present tense because it is not a theme-report, but a learning manual. I want to create the feeling that we are walking together on a journey through the Land of QLearn.

4.41 SELECT THE TYPE OF THEME-REPORT.

Prepare a field report. Original writing is some of the best learning. In writing, you think, you plan, and you perform. Much of your learning can be field-based. Performance reports, laboratory reports, journals and similar reports are very appropriate learning devices. You report what actually happened. This serves as basis for analysis of the event and for evaluation.

Write a term paper. Many classes have written assignments. Some are in the form of long papers. In all my schooling, I probably learned most from the term-papers I wrote and the research I conducted. This made me think. This forced me to organize all my learning and produce something that was worthwhile.

Develop a research paper. To you, research may have a very broad meaning. I hear students who look up something in an encyclopedia and say that they have done research. At best, they are reviewing literature. I use my PRO-LI-M-FI-C model of research, and it serves me well (Klimes 1991, 1-6). The letters stand for PROblem statement, LIterature review, Method, FIndings, and Conclusions. Actually, the model is similar to what I presented in system-questions and in case-problems. If there is no clear problem and a conclusion, research really did not take place. Of course, there are many more factors that make for good research, including validity and reliability (Freed 1989, 333-466).

Write an essay or creatively written article. Up to now I have been very structured and learning-outcome oriented. But there is also much room for creative activity in learning. And especially in literary writing. Here, the process is often an end in itself. Creative writing uses a different style from report writing. This book is written as a learning manual in the general report-style.

4.42 PLAN THEME-REPORTS.

Pick a topic and ask questions for the audience. Every report needs a focus. This unifying factor is usually a question or a purpose statement. A topic alone does not make for a good report. Do not tell me that you will write a report on mice. What about mice? And then, you are always writing to someone. I am writing this book to you as an individual, because you are reading it. Thus I avoid using "we" or "you" in the plural sense. I am talking to you while I am writing. You are my audience of one. I wrote my more theoretical book Quality Learning (Klimes 1993) for educators in a more scholarly style. In my mind's eye, I am looking at you while I am writing now.

Write first a proposal or perspective. Effective writing takes much planning. A proposal or a perspective consists of several paragraphs, or sometimes pages, that tell what the theme paper is all about. It is a skeleton of the paper. It is often written to obtain preliminary approval or financing. Here I propose that you use it to get also approval from the most important person in the learning process, namely yourself.

Outline and draft a report with a bibliography. I am writing now from an outline. It took me months to develop this outline. Then I carefully crafted each main point. I wrote the bibliography. Now I am writing a draft. Before I finish, there will be twelve more drafts. That is what it takes to write a book. With a computer, the editing is not so difficult.

Rewrite, and once again rewrite. As I stated above, I usually write a number of drafts. I edit and reedit. It is just amazing what you miss the first time you read your own writing. And the second time. See if your team-members can critique your paper.

4.43 WRITE THEME-REPORTS.

State the objective. If you stated the topic very carefully, you already may have your objective defined. If not, spend some time with it. Your objective may be a short statement, but it will run like a red cord throughout your paper. It will keep your report together, if you let it. I still remember reviewing a student's paper that lacked an objective. Three professors spent an hour trying to figure out what the student was trying to do. We never came to a conclusion.

Outline in three or more parts. You may call them parts or sections or chapters. But whatever they are, there needs to be an introduction, a body, and a conclusion. The body may have many parts.

Build paragraphs with evidence and support. After writing that last sentence, I am very conscious that what I write next must support the topic or main sentence. Let me support this paragraph with an illustration. A paragraph is like a house; it is erected block by block. The walls support the roof. Without the walls, the roof falls in. Without support, a sentence is an empty promise of a statement. It may be true or it may not be true. It is the writer's job to persuade the reader that what is said in the main sentence is meaningful and makes sense. This is done best with supporting statements.

Document sources. Review Chapter 2, on book-probes. The parts on documentation and bibliographies are relevant here.

4.44 IMPROVE THEME-REPORTS.

Correct the content (make sense). First, edit the paper yourself. Make corrections. Then put it away for a day or so. Repeat the process. Remember, if it is not clear to you, it will not be clear to anyone else.

Edit your style (use the right words). You know many ways to say the same thing. Keep it as simple as possible and still meet your style requirements. If you err, err on the side of being too direct.

Fit the planned length (use the planned number of pages). Stay within your limits. Nobody wants to read more than is necessary. A good short paper is usually better than an average long one. You have to be articulate without rambling when producing excessively long papers.

Develop the layout (use good design). Up to now, I never gave much thought to layout. I thought that layout only dealt with printing. I was wrong. The way you present your report greatly improves or reduces its usefulness. I have written a bit about design in the QL5.2 model in Part III. Look at it.

Table 18. Example of Report Outline

TREASURES OF WISDOM (based on Plato from Czikszentmihalyi 1990, 142; the text is in Part II, Chapter 2).

1. Freshness of the experience
    - 1.1 Happiness
    - 1.2 Enrapturing

2. Use of discourses
    - 2.1 Selection of discourses
    - 2.2 Synthesis of ideas
    - 2.3 Analysis of ideas

3. Questioning of ideas
    - 3.1 Puzzling about problems
    - 3.2 Questioning others about problems

LEARNING CHALLENGES

Use the content of this book as a basis for the following:

1. Write a 3,000 word field report entitled:
   "How I am changing my ways of learning."

2. Write a two-page self-evaluation of the report.

5. CHECK AND MEASURE YOUR LEARNING OUTCOMES.

5. MEASUREMENTS

Congratulations. You and I are coming to the end of our journey in the Land of QLearn Skills. But before I leave Part II, I want to make sure I have arrived where I had planned. That is what this section deals with. At the beginning of our journey, we spelled out some definite objectives. It would not make sense to part without knowing if we have achieved our objectives. At the start, we could not foretell what would happen, but we could plan. Now, near the end, we can check how close we have come to our objectives. And we can measure our progress toward our objectives.

"Tests and more tests," you complain. Not necessarily. It may surprise you, and possibly your teacher, that there are other, and often better, ways to evaluate learning. First of all, who said that you cannot evaluate your own learning. Before you do so, you would most likely review your materials very well. The review itself is learning. Actually, many things are not quite clear until you review them. And time is a wonderful teacher. Your brain seems to digest some ideas slowly. Just like grass travels in a cow's stomach, your ideas may travel from one section of the brain to another while you sleep. As ideas go back and forth in your brain to related ideas, they pick up new ideas like a snowball rolling down a hill. And do not forget to make T-notes of this new inspiration. That is exciting. That is QLearn.

Who you are and what you have is what counts in the end. If you have a Ph.D. but cannot do anything, your degree is useless. If you are a civil engineer but cannot design a simple bridge, your training was wasted. It also may have been ineffective if the bridge collapses. The proof that a cake is good is in the eating. If you baked a beautiful cake that tastes bad, that cake may be good decoration but not an enjoyable desert. In one way or another, you keep checking to see if you are on track. There is an end-line that you either reach on time, or that you reach late, or that you never reach. It is up to you. You have designed your learning well. There is no reason you should not reach your objectives.

5.1 REPEAT STEP-REVIEWS.

The day on which part of the Russian army entered my hometown is burned deeply into my memory. And so is my last birthday. I have reviewed some events in my life nearly unconsciously, so often that I can recall them instantaneously. What I fail to review, I forget. A one-time message to the brain must be very emotionally powerful to remain there for years. After adequate reviews, even an ordinary idea stays there forever.

BRAINWORK

> "The human mind is a miraculous construct, but it is not always logical.... This enables us to achieve all kind of things that are noble, exciting, beautiful, or witty; but it does occasionally make studying difficult... For regular review helps build a linear response within your mind, and thus gradually makes thinking easier, or at least congenial. Your mind will continue also to work in its wonderful, non-lineal ways; but you have added a skill..."(Palmer and Pope 1984, 54)

Learning is the adding of one skill at a time. Your brain puts into "cold storage" the things that are not used for a long time. So you have to keep using your learning. That is the function of step-reviews. Practice makes perfect. Quality demands a high standard. To reach that standard, a one-sweep learning is usually insufficient. Repeated step-reviews, while difficult and time-consuming, assure improved learning. This also brings release from the excessive cramming and marathon night study sessions just before examinations.

5.11 MAKE INVENTORY OF MATERIALS.

Collect key-words. By now you should have quite a collection of key-words. As you go back over this book, you will find key- words in your mark-lines, your T-notes, and your box-graphics. In your mind, the key-words lead you to main ideas that guide you to supporting ideas. Once you get a hold of the key-words, the ideas follow behind like a tail.

Develop definitions. I have discovered that finding and reviewing definitions gets me deep into the topic. I often think that I know exactly what something means, but I nearly always learn something new as I deal with definitions. They help me make sure I know what I am talking about.

Make outlines. Outlines may be in written or in box-graphic form. The outlines become the web on which all the rest hangs. You may use the outlines you already developed, but better still, you can develop new ones that summarize large areas of learning. I have found that outlining a whole course on one page gives me a new perspective.

Use formulas. In some fields of study, formulas are available and important. Sometimes you can make up your own. If they are there, they are there because you need to know, understand and remember them.

5.12 MANAGE TIME.

Write a monthly review calendar. I have to budget my time, otherwise I neglect reviewing. That is one of the purposes of a calendar. Write your appointments on it. Reviewing is a very important appointment. Reviewing is one of the most efficient uses of your time. After you have learned a skill, it is foolish to let it slip because of a lack of reviews. That would be like putting hundred-dollar bills in a pocket that has large holes. For the monthly review, one or more large blocks of time are needed. Plan to review monthly for two to six months, five hours each time, regardless of the tests. You are learning for yourself, not for the tests. On your calendar, also plan weekly and daily reviews. At least, review daily for two weeks, and weekly for two months.

Use weekly review sessions (60+ minutes). Monthly reviews alone are not enough. Your memory-curve dips very fast with time. So schedule weekly hour-long sessions. Pull everything you have learned that week out of your notes and brain, and then put them back in order. Do this for two to six months, and you will be comfortable with the learning outcomes.

Include daily evening or morning reviews (5+ minutes). Reviewing is so important and effective that some of it needs to be undertaken daily. You become familiar with the things you do daily. You know how to brush your teeth. You do this daily, or possibly even three times daily. Putting ten percent of your learning time into reviewing is a good investment and brings large returns.

An effective method of managing learning time is by scheduling each 60-minute period of each day for a week and then comparing the plans against the actual performance. Table 19 is a form for this exercise.

Write informal review projects. A review helps you check up on yourself. Your review tells you how much you have learned. If the review shows that you are still struggling with things you thought you had mastered long ago, it is then time to develop some review projects and relearn what you have missed. Your review can be like a net that catches your deficiencies. You then deal with your problem-areas by relearning. At times, it may be necessary to overlearn a skill until it becomes part of you.

5.13 PROVIDE SUMMARIES.

Use flash-cards. The most common review method is the use of flash-cards. They can help you remember key-words and outlines. Use them also for box-graphics. Always carry three by five inch cards. They come in handy.

Use T-notes. Go over your T-notes. And write summary T-notes about your T-notes. They take you back to your source and help you recall what you first learned. One way of reviewing your material is by writing personalizations of your written work. Place your own name where a particular person is mentioned.

Table 19. Study Time Management Chart

Date:	Plan	Actual
6:00		
7:00		
8:00		
9:00		
10:00		
11:00		
12:00		
1:00		
2:00		
3:00		
4:00		
5:00		
6:00		
7:00		
8:00		
9:00		
SUMMARY:		
Sleep Time:		
Meal Time:		
Learning Time:		
Other Time:		

Use box-graphics. I find box-graphics very helpful in reviewing. These pictures stay in my mind and I can easily enlarge on them. If possible, develop new ones for your review.

Use practice-exercises. Your skill is only as good as your demonstration of that skill. So do more practice exercises. If none are provided, make up your own. Be creative. Just making up your practice exercises is also a review. Some educators have suggested that you cannot be sure of most new skills until you have demonstrated them at least seven times.

5.14 MAXIMIZE REHEARSALS.

Consider conditions for rehearsals. Your review environment should be even more carefully controlled than your learning environment. You need full concentration. Any distractions are poison. Put everything else away. Give your full energy to the task at hand.

Plan self-tests. Since you are learning for yourself, you also can test yourself. Maybe the grade you give yourself is as important as the one you get from a teacher. Or more so. First, you must make up your own test. If you have followed QLearn and are perceptive, your test may be very similar to the one your teacher will give you. Developing a test is a good review by itself. But do not write in the answers. After developing it, put it away for a day or so. Then take it as you would take a regular test. Use the same amount of time you usually have for your school tests. Then correct it and give yourself a grade. If you are not satisfied with the grade, review some more, write another test, and go through the whole cycle again.

Conduct dress rehearsals. Your learning is much more than the result on a test. You have papers you wrote, projects in which you participated, T-notes, and possibly other evidences of your learning outcomes. Later on, some of these will go into your file-portfolio. But now, make your own exhibition. Put it all out. Look it all over. Spend some time just contemplating how it all fits together. You might even want to invite your family or friends to see your learning outcomes.

Hold rehearsal reviews. Throughout your review, you will find that you still have some weaknesses, that you give some wrong answers. Go over your old tests and look especially at the wrong answers. Ask yourself why you gave the wrong answer. Unless you reprogram your mind, the wrong answer will stay with you. So go back to the beginning. Go over your T-notes. Do more exercises. Do not stop until you are sure that the problem is corrected in your mind. In Tables 20 and 21, I am providing you with a general form that you may adapt to your needs.

LEARNING CHALLENGES

Use chapters 1-4 of this book as basis for the following:

1. Develop step-reviews for the above 12 modules.
2. Conduct a learning rehearsal for the above 12 modules.

Table 20. QLearn Step-Review Worksheet

1. Inventory of Learning Objective

COMPLETION DATE______________________________

REVIEW DATES______________, _________, _________, _______, _________

PERSON(S)______________________________

____

RESOURCES: Books______________________________

____

____

Audiovisuals______________________________

Computer Programs______________________________

ACTIONS AND LEVEL______________________________

RESULT(S)______________________________

____

PERCENTAGE OF ACHIEVEMENT______________________________%

STANDARD OF ACHIEVEMENT______________________________

2. Keywords______________________________

____

____

____

____

3. Definitions (enclose on separate sheet)

4. Summaries of Chapters (enclose on separate sheet)

5. Practice Exercises (do or redo the "Learning Challenges"
in this book)

Table 21. Example of QLearn Step-Review

1. CHECK-LIST OF OBJECTIVES

REVIEW DATES: May 2, 9, 16, 23

COMPLETION DATE: June 1

RESOURCES: Klimes, Rudolf. 1994. Learn in Brain-friendly Ways.

ACTION AND LEVEL: to plan a learn-to-learn course (Level 3)

RESULT: Course plan and supporting materials

STANDARD: 95%

CRITERION: Resource book

2. CHECK-LIST OF KEY TERMS

Objectives, book-probes, audio-visual quests, computer-searches, mark-lines, system-questions, T-notes, memory-mansions, box-graphics, case-problems, team-tasks, theme-reports, step-reviews, test-sets, file-portfolios, micro-learning, macro-learning, learning outcomes.

3. TIME MANAGEMENT

DAILY/WEEKLY: 5 and 25 minutes, at 6:00 a.m.

REVIEW PROJECT: Develop new examples in the book

4. SUMMARIES

T-NOTES: From reading and class, collected in binder

BOX-GRAPHICS: Develop one for each chapter

5. REHEARSALS

CONDITIONS: May 25, 7:00 p.m. at

DRESS REHEARSAL: With George Ball

Review notes

Make up simulated test for each other

Both take simulated tests

Correction of test and mistake-analysis

5.2 DEVELOP TEST-SETS.

You did not graduate from your last school without taking some tests. That is the nature of the system. You cannot avoid it. So you might as well enjoy it and make the most of it. If you QLearn well, tests are not that difficult.

BRAINWORK

"When the brain's natural capacity to integrate information is acknowledged and invoked in teaching, then vast amounts of initially unrelated or seemingly random information and activities can be presented and assimilated. Learners are patterning, or perceiving and creating meaning, all the time in one way or another" (Craine and Craine 1991, 81, 82). "We must remind ourselves that the ultimate purpose of evaluation is to enable students to evaluate themselves" (Costa 1989, 2).

Testing helps you assimilate what you have learned. Thus test-sets are just another way of learning (Berklak et al. 1992). You do not have to wait for someone to test you, you can do it by yourself. And you can calculate the difficulty index of your test by calculating the percentage of right answers. If the test was easy, you should score 70-90%, if it was difficult, 50-69%.

QLearn requires that the learning outcome be certified to be of adequate quality. A good grade on a school-test only means that, compared to other students, you wrote a better test then the students who received B's, C's, D's or F's. It does not mean that you are a quality learner or that you are fully competent in your area. The ten quality standards of QLearn are based on the ones developed for industry that are usually referred to as ISO 9001 (American National Standard 1987, 1-17).

1. Write out your job description as a learner.
2. Select the scope and sequence of your learning.
   (The scope states what topics you will learn.
   The sequence describes the order in which you will
   learn them. An example is in Part III.)
3. Set objectives.
4. Design controls that help maintain your QLearn.
5. Develop and inspect your file-portfolio.
6. Correct your mislearning and document the progress.
7. Prepare case-problems of selected learning situations.
8. Test your learning, and record the learning outcomes.
9. Participate in continuing education in learning-to-learn.
10. Design and implement continuous QLearn improvement.

5.21 PREPARE FOR TEST-TAKING.

Dedicate yourself to honest test-taking. Never cheat. This book is to help you learn, not just to get by. If you think at all about cheating, you have not really studied. Cheating is for mislearners. Cheaters really cheat themselves. They just waste their time and money and try to fool others. What they do is fool themselves into thinking that they have learned something. They have not. They have only learned to cheat. If that is your interest, you will not find any help in this book.

Review the content, practice the problems. The whole last chapter dealt with this topic. Review it.

Relate to people, and get some rest and sleep. As you prepare for a test, you may be tempted to cut yourself off from people and neglect your sleep. That is counterproductive. The people around you can encourage and support you. Without adequate rest, your brain will not work as it should. There is more on health in Part IV.

Manage all your test-time. Arrive at your testing place early. Take all the allowed time. If you have extra time, review and review again your answers. I have made it a practice never to hand in my test early. Thus I am more relaxed, have more time, and get better grades. To me personally, handing in a test early is not even an option. So I do not have to think about it. One other issue here is pacing. In long examinations, it is more likely that you will run out of time rather than that you will have extra time. In pacing, you allocate so much time for the first section, so much time for the second, and so on. When the time is up, you go to the next section. When at the end you have time, you go back and complete the section that you could not do before. Without pacing, you may get hung up at the beginning and never get to many of the much easier questions later on (Ellis 1991, 148-170).

5.22 ACQUIRE TEST-TAKING SKILLS.

Read the test questions two or three times and listen. You may be surprised how many students perform poorly on tests because they never even understand the questions. They read them fast and go right to it. It takes time for the question to sink in. Unless you fully understand, your answer may be a good answer, but not the answer to the question. Listen to the oral instructions. They often supplement the written ones and may give you hints of what is required. If you still cannot understand the question, raise your hand and ask. Do what is asked, nothing more and nothing less. Sometimes doing more may be acceptable, but usually it shows that you really do not know the answer in depth. Otherwise you would have gone into greater depth rather than expand the answer beyond the requirements. As I read the question, I like to make notes, mark them and underline the parts (Sherman and Wildman 1982, 13-120).

Do the easy questions first. I go through a test and first answer all the questions that are easy for me and that I am sure of getting right. I first skip any answer that I am not 100% sure of. This way I make certain that I get down on paper what I know. Also, I do not forget the answers. And at least I get credit for what I know.

Answer the skipped questions. After I have answered the easy questions, I go back and tackle the rest. If I have time, I check and recheck my answers. If I am not sure that I should change the answer, I do not change it. More often than not, my first answer was right. If I am convinced that I either misread the question or for another reason gave the wrong answer, I change it. There is no use staying with something that lowers my score.

5.23 REJECT/CHOOSE OBJECTIVE-TEST ITEMS.

Recognize and eliminate distractions. In objective tests, such as multiple choice questions, there is always one best answer surrounded by three or four distractions. You may know the answer so well that you recognize it right away. Or you recognize the distractions for what they are. But you always have to identify the distractions as wrong, otherwise you may miss the correct answer. For what you think is the right answer may be a distraction. If there are two nearly identical choices, chances are that they are both distractions. If the choice seems ungrammatical, it is most likely a distraction. If the choice includes "never" or "always", it is most likely a distraction. If it is overly technical, it may be a distraction. If you know all the distractions, what is left must be the right answer.

Recognize and choose the right answer. Usually, the familiar answer is the right answer. But still, watch out, it may be twisted into something wrong. Sometimes I find the clue to one question in another one. The phrases "in most cases" and "generally" often indicate the right answer.

Estimate the right answer. There are times when you do not know the answer. Do not give up. You may be able to construct the right answer from the larger context in which the question is given. First try to come up with a general estimate. Basically, you make an intelligent guess. Or an unintelligent one. But you try. Or list all the possible options and then pick the best one by eliminating poor ones. It just may work. The right answer is usually the most inclusive one, the one in the middle, the longer one, the more flexible one. It helps to know the subject, but at times it also helps to know how to take tests.

5.24 ORGANIZE ESSAY ANSWERS.

Outline by hierarchy or structures. In essay tests, you will find it helpful to start out with an outline to structure your answer. This also helps the teacher grade the paper and thus you often get a better grade. If possible, use headings and subheadings. Underline the headings so they stand out. Even in an essay test, layout may be important.

List and explain functions. Do not be afraid to use lists and to define terms. Use examples to make your points clear. Review what I presented in Chapter 4.4 on theme-reports. Much of it applies here also.

Construct and support themes. It is usually not enough to state an idea, you have to support it. So add the reasons you made the statement. Consider your hand with the thumb up and the four supporting fingers. The thumb is the main point, the four fingers the supporting points.

Develop concepts into a framework, and present a conclusion. At times, your essay question asks you to walk through a problem. This requires a listing of options or concepts. It all has to fit clearly together. And much depends on the end-result, the conclusion. Often, if the conclusion is wrong, all is wrong. And if there is no conclusion, there is no meaningful answer.

As you check your learning, you may want to complete the feedback sheet in Table 22. The results may help you in your learning plans. I conducted a pilot study of the instrument with 84 second-year college students. It showed the following average scores on a five-point scale:

Lowest average scores:

Learning involves meaningful practice (3.0).
Learning organizes for maximum understanding and use (3.2)

Highest average scores:

Learning is worth the time and effort (3.8).
Learning utilizes helpful learning materials (3.7)

When one group of students evaluated two learning situations, one learning situation was ranked consistently higher than the other on all of the eight objective questions. On a t-test, the last six questions produced t-scores that discriminated between the groups on a $p < 0.05$ level. The average score was 3.4 out of a possible score of 5.0.

Table 22. QLearn Feedback Sheet

Circle appropriate number:	1	2	3	4	5	0
	Poor			Outstanding		Inapplicable
Learning...						
1. Focuses on course objectives....................	1	2	3	4	5	0
2. Utilizes helpful learning materials............	1	2	3	4	5	0
3. Differentiates main vs. support points...........	1	2	3	4	5	0
4. Organizes for maximum understanding and use.........	1	2	3	4	5	0
5. Provides for relevant questions.....................	1	2	3	4	5	0
6. Involves meaningful practice......................	1	2	3	4	5	0
7. Results in improved attitude and/or skill.........	1	2	3	4	5	0
8. Is worth the time and effort....................	1	2	3	4	5	0

9. Specific strengths (1)______________________________

(2)____

10. Suggestions for improvement (1)__________________________

(2)____

(For research: Male__, Female__; Age___; Years of education__)

LEARNING CHALLENGES

Use Chapters 1-4 of this book as basis for the following:

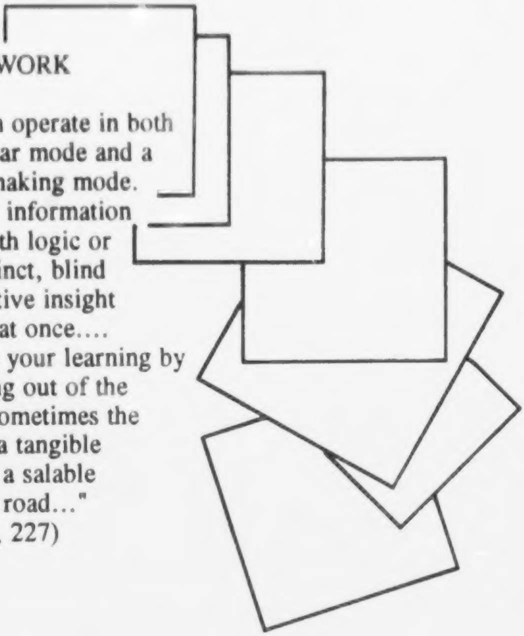
1. Develop a 40-question multiple choice test on the above.

2. Develop a four-question essay test on the above.

3. Take the above tests and write out the answers in 2 hours.
4. Evaluate the results of the test and give a grade.

5.3 COLLECT FILE-PORTFOLIOS.

I find it difficult to throw old shirts and shoes away. Through the years, they have become part of the family and part of me. The learning outcomes you produce are also part of you. They are worth keeping and organizing. They can be celebrated, shared and displayed, and they are much more valuable than worn-out shoes.



BRAINWORK

"Your brain...can operate in both an analytical/linear mode and a holistic/pattern-making mode. It can respond to information and situations with logic or feeling, rote instinct, blind emotion, or creative insight -- or all of them at once.... You can measure your learning by standards growing out of the learning itself. Sometimes the measure will be a tangible product, such as a salable tomato, a usable road..." (Gross 1991, 29, 227)

File-portfolios are tangible products of learning that you can hold, touch, weigh, store, copy, display and exhibit. They are good measures of your learning. They are evidences of the pattern-making approach of your learning outcomes.

The following definition of a portfolio was developed by the Northwestern Evaluation Association: "A portfolio is a purposeful collection of student work that exhibits the student's effort, progress, and achievement in one or more areas. The collection must include student participation in selecting content, the criteria for selection, the criteria for judging merit, and the evidence of student self-reflection" (Meyer and Schuman 1990).

Portfolios are not only for learners, but for all individuals who produce things. Thus a professor's portfolio may include her resume, her curriculum designs, course plans, and her research reports. An administrator may include in his portfolio the plans and product he developed. Artists have long used portfolios to organize their art work.

5.31 DESIGNATE OBJECTIVES OF PORTFOLIO.

Improve school grades. In some cases, your portfolio can serve as the basis for your school grade or an improved grade. More and more schools require student portfolios. Even if none is required, by developing your portfolio, you will improve your learning outcomes.

Find employment. When you apply for a job, many employers want to know what you can actually do. The portfolio provides samples of your products. Showing them to your prospective employer may help you obtain the job you want.

Win promotion. Your employer usually has to have a reason to give you an increase in pay or a promotion. Often it is just length of service. At times it is the quality of work you did, or the quality of work that you can do, that gets you a promotion in position and a raise in pay.

Collect evidences of your learning for enjoyment. This last reason for developing portfolios may be the best one. As I said, you learn for yourself. Just to see what you did over the years, and what you can really do, is very satisfying. It may help you keep on learning.

5.32 SELECT MATERIALS FOR PORTFOLIO.

Collect writings. Your portfolio is usually a collection of writings. Writing is the main way of communicating ideas in our civilization. So your writings may include reports, your resume, and many examples listed below. A file-portfolio may be stored in one or more boxes, files, or display cases.

Collect pictures. Your products may be also in the forms of pictures. This may include visuals and box-graphics. Artists use portfolios to document their skills.

Collect audio-tapes and videotapes. New technologies provide new opportunities. The audiovisuals that you produced may present a sampling of what you can produce.

Collect computer diskettes. With much information in computers, computer diskettes may provide unique ways to show your accomplishments. In some cases, programs that you have written are the best way to demonstrate your skills. Table 23 presents examples of portfolio materials.

Table 23. Examples of Materials in Portfolios

	A	B	C
WRITING	Reports	Projects	Checklists
	Articles	Book-lists	Reflections
	Thesis	Resumes	Evaluations
	Logs	Journals	Anecdotes
PICTURES	Photos of products	Drawings	Art
TAPES	Performances	Programs	Oral history
COMPUTER DISKS	Written programs	Produced files	Documentation

5.33 ADD TO YOUR FILE-PORTFOLIO.

Develop a criterion. A portfolio is not just a random collection of the papers your wrote. It is a designed and organized product in itself that fits together and meets a need. Thus a criterion for what is included and what is excluded is required. Each field is so different that I will not try to give an example. Remember, a portfolio is built as carefully as a theme-report and has most of its characteristics.

Set a time. Your portfolio spans a given time. You set the starting and ending times. Often, your portfolio will deal with your products over a one-year or two-year period, but there is a definite place for long-term portfolios, such as those covering five, ten or even twenty years.

Provide balance. Remember the portfolio is a sample, not a collection of all you did. Please balance the different parts. Exclude things that appear to be over-represented. You are already giving clues to your interest if you include mainly one type of material on a given topic. The balance in your portfolio shows the range of your skills.

5.34 DISCARD FROM YOUR FILE-PORTFOLIO.

Substitute improved products. You may find it very hard to discard things from your file-portfolio. The quality of your file depends on selective discarding and replacing some items with better ones. If you just add, you get a collection, not a portfolio.

Implement quality control. As you review your portfolio, review the writing standards, the objectives, and the organization of your material. Consider the details, the voice, the tone, the grammar, the usage, the mechanics of writing. Where appropriate, use mathematical standards of problem solving and communication.

Use volume control. A small, high quality portfolio is much more impressive than a large poor one. Often the sheer volume of available materials makes discarding materials from the portfolio difficult. But it has to be done. Your portfolio is the physical evidence of your learning-outcomes and what you can do. If you have used QLearn fully, you will have an outstanding portfolio. Congratulations.

LEARNING CHALLENGES

Use chapters 1-5 of this book as basis for the following:

1. Design and develop a file-portfolio on the above.
2. In two pages, evaluate your learning experience as it relates to the file-portfolio.

PART III. HOW CAN YOU DESIGN YOUR QLearn?

QLearn PLAN

Up to now, you and I have explored the 16 specific learning-skill modules. It is time for us to look at your learning approach. You think that should be easy. "I do poorly, and that is all there is to it," you may say. Well, there is more to it, much more.

You are a unique person. Your story is different from that of every other person in the world. Your brain, too, is different from every other brain. Not only that, but you live in a special place with problems that few people face quite the same way as you do. Then you may be interested in artificial intelligence, and there are only a few thousand people who know much about this field. So the combination of your brain, your circumstances, and your interests make you the only person of your kind on earth.

So far, you most likely have not designed your learning. I have never met a person who sat down to plan in detail how they would master a subject. I am sure that there are some who have done so, and this is exactly what I am asking you to do. This request should not strike you so strange. You plan your vacations. You plan the use of your money. Why not plan and design your learning? Figure 15 shows how the five types of QLearn modules fit together.

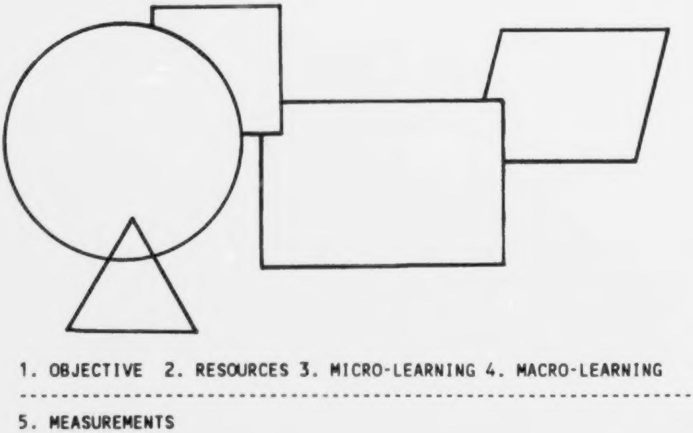

1. OBJECTIVE 2. RESOURCES 3. MICRO-LEARNING 4. MACRO-LEARNING
5. MEASUREMENTS

Fig. 15. Plan for Five Types of Brain-friendly Learning Modules.

"I have done quite well so far without planning" you may retort. Well, this is exactly why you have done only "quite well" and not "very well". Your lack of organization has hindered parts of your learning. Often you have spent time on mislearning. Then you were surprised when you were unable to solve an assigned problem. You asked yourself, "Why didn't I study this?" I shall tell you. Because you lacked a plan or a design, many things slipped between your fingers.

Langan suggested four learning survival strategies, namely: "be realistic, be persistent, be positive, and grow" (Langan 1982, 17-21). This section will show you how to implement this advice.

1. STUDY YOUR LEARNING STYLE.

When I took my first IQ test, after arriving in Montreal from Czechoslovakia, I knew very little English. Marvelously, I scored an IQ of 70. I do not know if there are IQ tests for music and bodily-kinesthetic intelligence, but if there are, my IQ in these areas would be low. We all win some and lose some. Whoever gave you the idea that you have to be smart in everything to win? Einstein never made the Olympics.

BRAINWORK

Gardner's seven intelligences are: linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, intrapersonal, and interpersonal (Gardner 1983).

You may have thought that you are either smart or not, and that your IQ tells you how intelligent you are. Gardner (1983) and others are showing through their research that this is not the case. You have the possibility of having at least seven types of intelligence (Lazear 1991). Explore your intelligences and how your learning style relates to them (Keefe 1988).

1.1 MAKE YOUR HABITS WORK FOR YOU.

Act swiftly or slowly. I am the fast type; I walk fast, I work fast, I eat fast. My wife sometimes tells me to slow down. But working fast is my nature. I miss things and I spoil projects by doing things too fast. You may be much smarter than I, but you may be the slow type. You move slower, you talk slower, you react slower. Speed is often thought to be a function of intelligence, but it really is not. It is just our race-horse culture that has given the prize to the speedy. In life, often the turtle wins the race.

Be formal or informal. When I was dean of boys in an academy, I found that some students in my dormitory were very tidy, structured, organized, and still got poor grades. Others were messy, sloppy, and very informal but got good grades. The informal students made their informality work for them. The formal boys did not use their formality to the fullest.

Lead or follow (encoder/decoder). You may be a good follower but a poor leader. Or the other way around. Still others may be good leaders and good followers. A leader encodes programs for followers to decode. Followers are good at decoding the leaders' instructions, but they may be poor at encoding. Whatever your talent, enjoy it. And if possible, develop further talents. Do not work continually against the grain. It makes you difficult to get along with and a mislearner.

1.2 SELECT YOUR SUBJECT OF LEARNING.

Use languages and philosophy. For years I lacked an interest in languages. In my native Czechoslovakia, I nearly failed English and had to have a special tutor to get me through high school English. Over the years I have become a linguist, not by formal study of the discipline, but by the necessary learning and practicing of some ten languages. Now I teach graduate courses and guide masters' theses in Korean. I usually immerse myself in the language of the country in which I work. When I come up for air after a year or so, I speak it. Some languages I speak poorly, but fluently. So sometimes the subject of your learning is not your free choice, but determined by your circumstances. You may be surprised at your talents, if you give your brain half a chance. Something similar to this could be said about philosophy. Consider the QL5 skill plan at the beginning of Part II.

Perform mathematical and science problems. In high school I had to study assigned subjects, but as I continued my education, I could choose. I had to choose, because there was just too much to learn. Every five years, the available information doubles. I like mathematics, and I even taught algebra and trigonometry successfully at the secondary level, but myself, I have never passed a college mathematics course. I have other interests that surpass my mathematical interests. For some time, I have been steeped in the health sciences, and these studies give me great satisfaction. Examine the QL5.1 skill plan at the end of Part III.

Master a practical or fine art. You may be talented in art or music. That is wonderful. Becoming skilled in these areas may not earn a living, but it makes you a whole person. Leaving these gifts dormant, leaves you impaired. Read the QL5.2 skill plan at the end of Part III.

Discover the social sciences. I consider myself a student of the social sciences and learning. I am fascinated with people and the way people change. This may leave you cold. If you can, choose subjects that excite you. Review the QL5.3 skill plan at the end of Part III.

1.3 CONSIDER YOUR ENVIRONMENT.

Use physical resources. You have many things going for you. You are healthy, you have a home, and you have enough money to buy this book. You must have enough money to buy further books, or you would not have spent your last dollar on this one. In other words, count your blessings. Chances are, it is not lack of resources that holds you back and forces you to become a mislearner. It is most likely the unplanned allocation of your resources.

Utilize emotional resources. You have emotional energy for just one big thing at a time. If you are troubled about your family, you most likely do not have enough strength to put your all into learning. QLearn takes all you have. You cannot do it with your hands tied behind your back. So perhaps solving your big problems should be one of your first learning projects.

Make use of informational resources. Living overseas, I have limited informational resources. Today I would just love to visit a large American university library and check out a few sources. I cannot do this. I have learned to do the most with the resources I have. Maybe that is the key.

1.4 DISCOVER YOUR INTELLIGENCES.

Consider your various intelligences. Gardner (1983) suggested seven intelligences that people may or may not have. The normal intelligence tests measure mainly verbal and logical intelligence, and ignore the other five areas. You may shine in any or all the seven areas. I, to my sorrow, have found that my music and body movement IQ are in the 60s or 70s. I may make up for this lack in other areas. At least I know who I am, and I do not fret about it. By the way, I am raising my intelligence in the body area at least a point every three years. I am improving my flexibility in gross and fine motor skills slowly, very slowly. Yet I know that I will never dance in the Bolshoy.

Rank your areas of intelligence. The following table outlines the seven intelligences. It has been suggested that the common words you use often give hints concerning your intelligence (Anderson 1984). I am also giving examples of resources that individuals with a particularly strong intelligence usually like. Anyway, ask yourself: Am I a word person? Give yourself a 5 (high) or a 1 (definitely not) or something between. For your encouragement (or discouragement), I am a "1" as a music person, I have to carry my notes in a basket. In music, my only talents are volume and range. I lack a sense of control. At least, that is what a former student told me.

First think about the extent of your abilities in the seven areas of intelligence. You are gifted in some things and not so blessed in others. You commonly use some expressions but not others. You like some learning resources, but not others. By considering these factors, you can come up with one of the seven areas in which you feel talented. On Table 24, place a "5" in the "score" column next to that area. Continue to rank the areas, until you have assigned a number to all seven areas. Your "1's" will designate your lowest areas of intelligence.

Table 24. Seven Intelligences

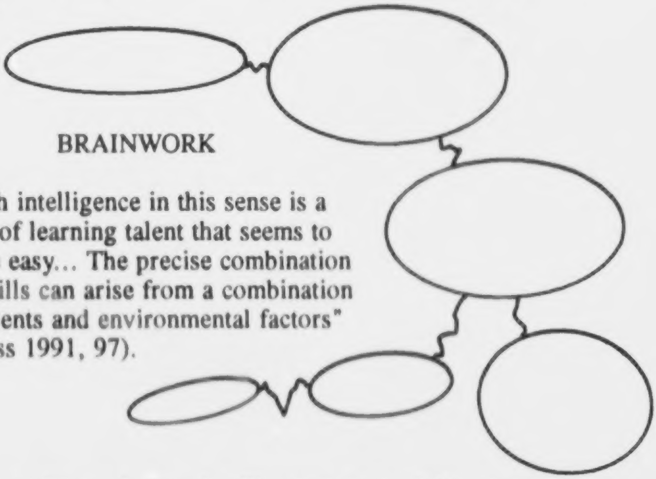
7 INTELLIGENCES	WORDS	EXAMPLES OF RESOURCES	SCORE
WORD-PERSON	"Your words frighten me." "I hear you."	Books	____
PICTURE-PERSONS	"I see what you mean." "Glad to see you."	Television	____
MUSIC-PERSONS	"I'm in tune with you." "This sounds good."	CD	____
BODY-PERSONS	"I'll keep in touch." "Let's move on."	Exerciser	____
LOGIC-PERSONS	"What you say adds up." "This makes sense."	Numbers	____
PEOPLE-PERSONS	"I can relate to this." "Come again."	Friends	____
SELF-PERSONS	"I feel good about this." "How are you?"	Think-Time	____

LEARNING CHALLENGES

1. In five-sentence paragraphs, explain how you relate to each of the seven intelligences.
2. In about 300 words, explain how you can strengthen your areas of weak intelligence.

2. DISCOVER YOUR LEARNING PATTERNS.

We surely are different, at least I hope so. This world would be a sad place if there were too many "me's" in it. You know your weight and your height, why do you not know your personal learning patterns? Discover them.



BRAINWORK

"Each intelligence in this sense is a kind of learning talent that seems to come easy... The precise combination of skills can arise from a combination of talents and environmental factors" (Gross 1991, 97).

As you understand your intelligences more fully, you will be able to use your learning patterns more freely. Your learning will, of course, depend not only on your intelligences, but also on the circumstances and the subject.

2.1 UTILIZE YOUR STYLE.

The next few tables may help you use your learning patterns. According to your seven-fold intelligence, there are some learning skills that you will find easier and more helpful than others. This does not mean that you must limit yourself. You may find it useful to know why some learning comes easier to you than others. For example, I learn very well through box-graphics because I am a picture-person.

People with different strengths think and communicate in different ways. That makes sense. So, for example, your strength with words will involve words more in your thinking. And you may use more words in communication. Read on. And examine Table 25.

Table 25. Thinking and Communication

7 INTELLIGENCES:	THINKING	COMMUNICATING
WORD-PERSONS	LITERAL	TALK
PICTURE-PERSONS	VISUAL	FACIAL EXPRESSIONS
MUSIC-PERSONS	AESTHETICAL	TONE/PACE/SONG
BODY-PERSONS	EXPRESSIVE	BODY-LANGUAGE
LOGIC-PERSONS	METHODICAL	NUMBERS
PEOPLE-PERSONS	SOCIAL	LAUGHTER
SELF-PERSONS	INSIGHTFUL	MEDITATION/PRAYER

2.2 LET YOUR SENSES SERVE YOU.

What you learn enters your head mainly through the few holes you have in it. You learn through your ears, you nose, your mouth and your eyes. You also learn through your hands. We call these our five senses. There may be a few more senses, but this is not the place to discuss them. In QLearn, you try to make the most of those inputs. Remember, you may hear something you did not see. Relying on only one sensual input may be dangerous to your learning. Tell this to the teachers who drone on in 50-minute monologues without interruption and audiovisuals. Or better yet, do not tell them. Find better ways to communicate your frustrations.

Table 26 presents some input that persons with various intelligences are especially sensitive to. One additional note. Gardner and others are investigating the possibility of three additional intelligences, namely culinary, intuitive, and sense of humor intelligences.

Table 26. Intelligences and Three Senses

	Ears (sound)	Eyes (light)	Hands(environment)
7 Intelligences	Volume	Brightness	Degrees
WORD-PERSON	Listening	Reading	Writing
PICTURE-PERSON	-------	Seeing	Drawing
MUSIC-PERSON	Listening	Reading	Performing
BODY-PERSON	Hearing	Observing	Making
LOGIC-PERSON	Hearing	Reading	Writing
PEOPLE-PERSON	Hearing	Observing	Feeling
SELF-PERSON	Imagining	Visualizing	Feeling

2.3 MAKE YOUR THINKING WORK FOR YOU.

Through my travels I have learned that there is more than one way to cut a loaf of bread. Also, there is more than one way to categorize nearly everything. That includes thinking (Michalko 1991). But I had to start somewhere. Most of my thinking is either random or focused (deBono 1985, 146). My focused thinking falls into one of three categories: prescriptive, critical, and creative. When I think prescriptively, somebody tells me what to do, or I tell someone else what to do. When I think critically, I analyze and pull to pieces the parts to find if the whole is true, if it works, or if I like it. (Critical does not mean criticizing.) I am creative when I come up with new box-graphics and similes.

There is actually a continuum between random and focused thinking. Some brain input comes internally from the memory and related processes, some from the external senses, others comes from both internal and external sources. Figure 16 highlights four examples of thinking. Day-dreaming is internal random thinking. Background music and sights result often in externally input random thinking. Worry is focused or misfocused internal thinking. Learning usually results from focused thinking that is based on some external sensory input.

	INTERNAL INPUT	EXTERNAL INPUT
RANDOM THINKING	Day-dreaming	Background
FOCUSED THINKING	Worry	Learning

Fig. 16. Random and Focused Thinking

The following table gives some examples as they relate to the seven types of intelligences and focused thinking.

Table 27. Focused Thinking

7 Intelligences	PRESCRIPTIVE	CRITICAL	CREATIVE*
WORD-PERSON	Laws	Differences	Poetry
PICTURE-PERSON	Patterns	Exhibiting	Drawings
MUSIC-PERSON	Theories	Appreciation	Composing
BODY-PERSON	Exercises	Contests	Choreography
LOGIC-PERSON	Formulas	Problems	Puzzles
PEOPLE-PERSON	Conformity	Conflict	Teams
SELF-PERSON	Order	Rightness	Imagination

Other creative thinking includes: asking questions, expressions of opinions, taking high risks, showing emotional sensitivity, seeing humorous aspects, sensing beauty, expressing nonconformity, and criticizing constructively.

LEARNING CHALLENGES

1. In complete sentences, show how you can use each of the seven intelligences to analyze parts of a selected piece of writing.
2. In 600 words, describe yourself in creative language.

3. RECALL QLearn PRINCIPLES.

I have a user-friendly computer. The keyboard is laid out so that I can find what I need. And my software is user-friendly. There is even a help program when I get into trouble. You can learn in a way that is user-friendly to your particular brain, situation, and learning content.

BRAINWORK

> "Smart people have more complex, more efficient, neural highways for transmitting information: Ph.D.s have a vast complicated neural web, but high-school dropouts only a sparse, inefficient one.... Einstein's brain had four times more 'oligodendroglia' --helpercells that speed neural communication -- than the brains of 11 gifted people she [M. Diamond of UC Berkeley] also studied. But were better neural networks the cause or effect of Einstein's genius?" (Begley 1993a, 39)

Smart people are much more likely to learn in brain-friendly ways than average people. They use their brains more efficiently. And they have better brains. As asked in the quotation above, nobody yet knows if they are smart because they had better brains to start with, or if their brains developed more because they were better learners and thinkers. As far as you are concerned, you are most likely not using all your brain capacity. I have never met a person that does. So you are smart enough to QLearn. Some principles that will help you learn in brain-friendly ways follow (Caine and Caine 1991, 79-88).
I first presented them in summary form on page 3.

3.1 ENCODE VARIED EXPERIENCES.

1. Use meta-criteria. Over the years, my brain has been educated to accept a few large criteria to evaluate its input. It may be the conscience. I know when something is good, or right, or true, or beautiful. Different people may have various ideas about beauty, but most have some feeling for it (Lipman 1988, 39-41). I look for reliability, relevance, strength, coherence, consistency. I seek the best and most for my time and money. These are all general criteria by which I measure the quality of things and ideas. They help me select the objectives that fit me. These criteria have special meaning for me and help make the person I am. I do not learn to please anybody, but my God and myself. Anymore, I do not learn for the teacher or for a grade. When I give up the ownership of my learning, I am in trouble. I can easily become a victim of poor teaching and a complainer. That solves no problems. By being in charge, I make my plans and have my rewards. My learning has unique meaning for me and for me alone. If at all possible, I will try to fit into the system. Yet I do not let the system hold me back.

2. Learn through multisensory experiences. The more senses that are active in learning, the more likely that learning is taking place. You can see a rose, you can smell it, and you can touch it. All the senses work together to help you sense reality. The brain works simultaneously in many channels, and all the signals must come together at one time to present the full picture. QLearn uses many signs, graphics and audiovisuals. You have seven intelligences, so there is no reason to limit yourself to experiences of one sensory type.

3.2 ACT RESPONSIVELY.

3. Learn actively. I usually sit in the front row at seminars. If I have taken the time and made the effort to be there, I want to get the most out of it. Otherwise I might as well stay at home and enjoy a good book. I sit in the first row because I do not want to be distracted by bobbing heads in front of me. Also, in the back I might miss all the small emotional expressions of the lecturer that often make a session so much more interesting. I sit there with my pen and paper, writing notes, comments and questions. I teach myself. If permitted, I ask

questions. I am actively learning. In the back of the room are the people who yawn. The brain that is actively involved learns, grows and becomes more efficient. Otherwise, it slowly dies.

4. Associate ideas with each other. The brain works by associating the new with the old. This association may be by size, shape, color, event, or any number of things. As you learn, you relate the supporting points with the main points, the heard things with the seen things. Your synapses grow and bridge information and ideas. Thus you gain more channels for further exploration. One way to do this is by questioning. As you face the unknown, you associate new ideas with old ones and find answers to your questions. You learn both through questioning and answering.

5. Order your memories. You cannot remember everything. Neither would you want to overload your mind with the millions of meaningless details that you see and hear. So you select only some units of information to place in your working memory. It will stay there as long as you use it frequently. After some time, it may become part of your long-term memory. With regular use and reuse, it will remain there as long as you live.

3.3 FIND PATTERNS.

6. Integrate your learning. As a pattern-seeking organ, my brain seeks to make sense of things by relating issues to each other. This is best done when all the pieces of the puzzle neatly fit together into one integrated picture. Even when there are a few missing pieces, my brain can supply them. I can remember the whole picture, but the separate pieces alone may be fragmented and soon forgotten. Thus I try to put all my life together into one unbroken whole.

7. Provide emotional support. Your brain always functions within a context of feelings. When the emotions are positive, the brain functions better then when they are negative. Fear and anxiety contribute to mislearning. You may try to tell me that much of your learning is without emotions, but I doubt it. The emotions are there, but you may just be unaware of them. Effective teamwork provides positive emotional support for learning.

8. Distinguish between main points and supporting points. You, like I, have most likely discovered that much of learning is the differentiation between main points and supporting points. You ask yourself continually whether something is important or not. "Where is the key that unlocks the riddle?" By prioritizing items, you organize them into a framework that fits together. Thus the brain can more easily form all into one pattern. Learning has meaning within a large picture. And that picture may be an audiovisual or a box-graphic. Many QLearn skills depend on key-words and main ideas.

3.4 PROVIDE FEEDBACK.

9. Reinforce your learning. The brain is constantly at work. Even in sleep. The neurons keep firing at a random pace throughout life. So, in order for learning to take place, it has to make a sufficient impression within the neural network to cause temporary or permanent changes. This is done through reviews, rehearsals, and other reinforcements. Unless supported by strong emotions and reviewed, most learning is forgotten within a month. Usually just a general idea remains. Thus QLearn provides for regular, designed step-reviews.

10. Repeat evaluations. The electrical impulses in some neurons do not run in one direction only, but they run back and forth. Further, there are neurons that provide continuous feedback to assure that the desired effect has been reached. If I move my hand, something in my brain tells me to stop moving it when I have reached as far as I wanted to reach. This is true with most learning. The more fine-tuned this feedback becomes, the more precisely I can work out my problems.

Based on the various characteristics of the brain, I designed the 16 learning skills modules presented in Part II. Most learning skill modules have been around for a long time, but they have not been organized and used in a designed learning system. Figure 17 presents a summary of the relationships between the brain-friendly principles and the QLearn modules.

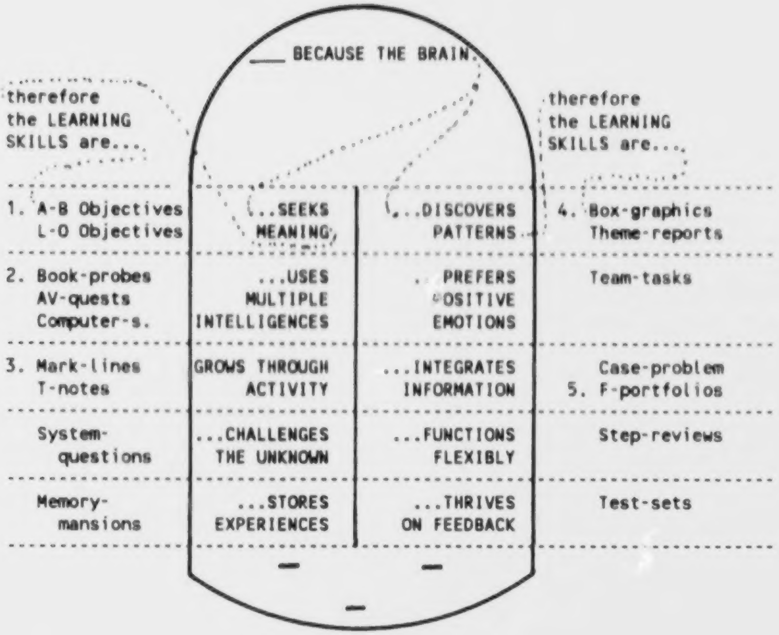

BECAUSE THE BRAIN
therefore the LEARNING SKILLS are...
therefore the LEARNING SKILLS are...
1. A-B Objectives L-O Objectives
...SEEKS MEANING
...DISCOVERS PATTERNS
4. Box-graphics Theme-reports
2. Book-probes AV-quests Computer-s.
...USES MULTIPLE INTELLIGENCES
PREFERS POSITIVE EMOTIONS
Team-tasks
3. Mark-lines T-notes
GROWS THROUGH ACTIVITY
...INTEGRATES INFORMATION
Case-problem
5. F-portfolios
System-questions
...CHALLENGES THE UNKNOWN
...FUNCTIONS FLEXIBLY
Step-reviews
Memory-mansions
...STORES EXPERIENCES
...THRIVES ON FEEDBACK
Test-sets

Fig. 17. Brain Characteristics and QLearn Modules

LEARNING CHALLENGES

Review the above brain-friendly learning principles. Choose a page or two in one of your favorite books.

1. In five-sentence paragraphs, apply the above principles in analyzing the chosen writing.
2. In about 600 words, explain what you have learned in the process.

4. MODEL YOUR QLearn.

Bear with my theorizing. It cannot be avoided without this book falling apart. The QLearn models pulls all the parts that we talked about up to now together into unified pictures. While these pictures are not simple, neither is your brain.

BRAINWORK

"Our brain is made up of tens of millions of relatively small basic neural networks, and...each neural network processes a very specific element of the external world--a single sound, a diagonal line. Various interconnected combinations of these networks process more complicated related phenomena--from phonemes and triangles to words and pyramids (Sylwester 1993, 48).

The QLearn models are types of neural network frameworks that recognize a variety of inputs, have many hidden and unknown processors, and form outputs that result in learning. These models are very different from the behavioral stimulus-response approaches, that have been the theoretical structure for much education, or Gerald Edelman's (1992) Neural Darwinism biological model, in that QLearn is wholistic and objective-driven.

Richard W. Scott of Stanford University (1978) proposed a two-dimensional management grid, with closed-to-open systems as columns and rational-to-social actors as lines (Peters and Waterman 1982, 91). The QLearn model relates to Scott's management model in

Figure 18, for the best learning takes place in open systems where social actors interact with learning resources to produce quality learning outcomes.

	CLOSED SYSTEM	OPEN SYSTEM
RATIONAL ACTOR	1900-1930	1961-1970
SOCIAL ACTOR	1931-1960	1971-present

Fig. 18. Four Stages of Management Theory (Peters and Waterman 1982, 91-94)

4.1 CONSIDER THE NETWORK MODEL.

Identify the learner. The QLearn neural network model starts with you, the learner. It is learner-centered. In learning, it is you who changes. That change is the primary objective of learning. You may use QLearn and really learn, or from the very start you may learn half-heartedly and thus mislearn.

Identify the learning. Learning involves the use of resources and of micro-learning and macro-learning activities that cause changes in attitudes and skills. The learning acts on you in a network fashion to produce changes in you. You select the appropriate resources that will be helpful in producing changes in you. But resources alone, books by themselves, do not teach. You use learning resources to bring about changes in yourself. You choose learning activities that 1) best fit your particular intelligences, that 2) take the least time and money, and that 3) are most effective in bringing about the desired changes.

Note the Learning Objectives. The objectives of learning explain the expected outcome of the learning. They tell you how the learning will change you. It would be good if all learning would meet all stated objectives. Sometimes, even in QLearn, I fail to measure up to my objectives. Rarely, these unexpected outcomes are better than the objectives, sometimes they are just different. Most of the time, they are irrelevant, harmful or of low quality. Life would be too boring if there were no unexpected results.

Consider the feedback loop. Learning is never linear, but always involves repeat loops that help monitor the present state of learning. This feedback mechanism makes the continuous necessary adjustments that keep learning on track toward the objectives and desired learning outcomes.

Recognize the hidden processors. The model in Figure 19 starts with learners who encounter and respond to various learning resources and activities. These interactions are in hidden processors. The result is a changed learner who has integrated intended or unintended learning outcomes.

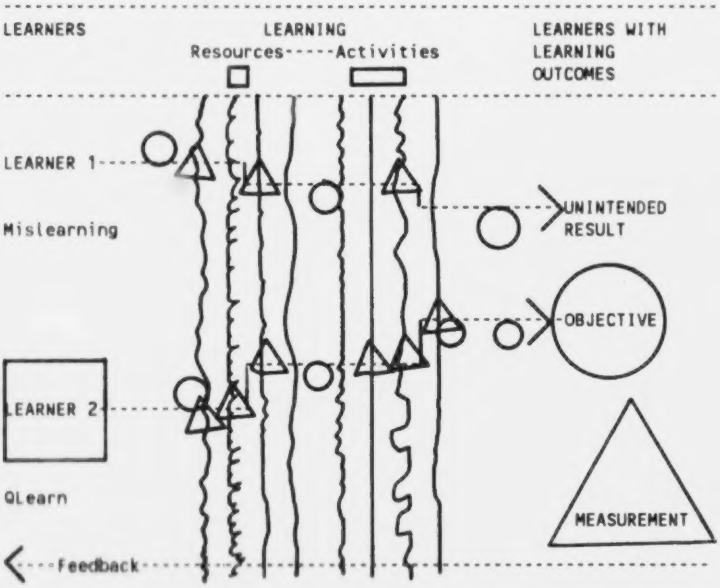

LEARNERS
LEARNING
Resources-----Activities
LEARNERS WITH LEARNING OUTCOMES
LEARNER 1
Mislearning
UNINTENDED RESULT
OBJECTIVE
LEARNER 2
QLearn
MEASUREMENT
Feedback

Fig. 19. QLearn Neural Network Model
NOTE:○Feedback loops,△Interactions in hidden processors.

4.2 USE THE QLearn BRANCH MODEL

Consider fractuals. While the QLearn Neural Network Model represents one view of learning, there is another aspect that I need to present here. The above model functions not one time in a lesson, but over and over hundreds or thousands of times every second. And not only on one level, but in patterns that are repeated on a smaller and smaller scale. I call this "decreasing size pattern repetition". In complexity physics, it is called "fractuals". Thus "the branching pattern of a tree trunk will be repeated in its limbs, then in its twigs, and finally in its leaves" (Lium and Hancock 1993, 39).

Use the parts of the QLearn Branch Model. The QLearn Branching Model in Figure 20 looks like a tree with many branches and root-branches. The (1) objective is the stated (5) learning outcome. To get to the learning outcome, (2) learning resources are used in (3) micro-learning and in (4) macro-learning. The root-branches absorb the learning resources, convert them in the micro-learning and macro-learning processes, and produce the learning outcomes. This and model was developed from an earlier ORAM Model (Klimes 1990, 6, 7). ORAM stands for objectives, resources, activities of learning, and measurements. The ORAM model was based, in part, on Tyler (1949, 1, 2).

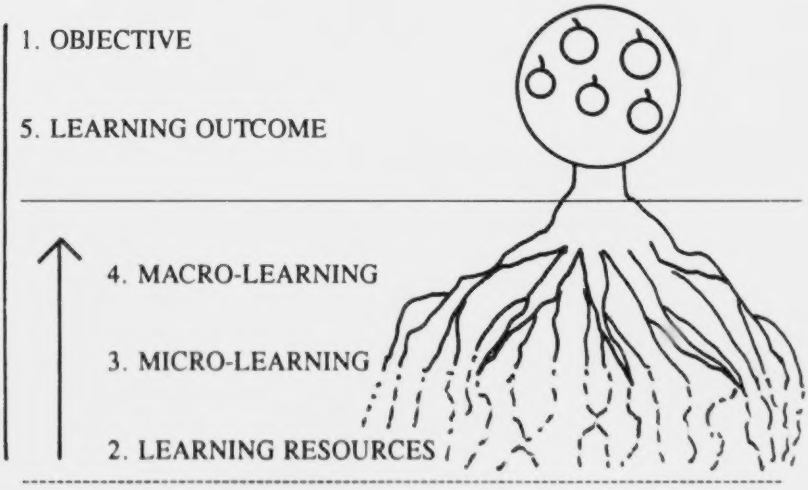


Fig. 20. QLearn Branch Model

4.3 MAGNIFY LEARNING CROSS-SKILLS.

Of all the various micro-and-macro-learning activities, parts of three modules permeate most learning skills. You will find yourself using questions in most learning skills. Questions are very helpful in eliciting the needed information and to keep the process going. The use of visuals is another central activity. You can get along without them, but once you learn to use them, you will find them very effective. Much of life is problem-solving. So is much of learning. You continually make choices. And when you make choices, you solve problems or potential problems. I chose to call these three skills QLearn cross-skills and chart them in Table 28.

Table 28. QLearn Cross-skills

	USING QUESTIONING	USING VISUALS	PROBLEM-SOLVING
Zero in on A-B Objectives	-	-	V
Design L-O Objectives	V	-	V
Employ Book-Probes	V	V	V
Peruse Audiovisual-Quests	V	V	-
Conduct Computer-Searches	V	-	V
Draw Mark-Lines	V	V	V
Ask System-Questions	V	V	V
Take T-Notes	V	V	V
Build Memory-Mansions	V	V	V
Chart Box-Graphics	-	V	V
Solve Case-Problems	V	V	V
Share Team-Tasks	V	-	V
Write Theme-Reports	V	V	V
Repeat Step-Reviews	V	V	V
Develop Test-Sets	V	V	V
Collect File-Portfolios	-	V	V

LEARNING CHALLENGES

1. Use a lesson as an aid to walk through the models. In 600 words, explain how the models work in your particular case.

2. Rearrange the parts of the above models to fit your concept of learning. Or develop and explain your own model.

5. PLAN YOUR QLearn SKILLS.

The next few pages will give you many choices. If you do not like choices, just study QL5, that is Sections 1.1, 2.1, 3.1, 4.1 and 5.1 in Part II and leave it at that. QLearn can be as simple as you want it, or as detailed as you need it. The simple method I call QL5 includes just one skill from each of the five areas. That is the developing of A-B objectives, book-probes, mark-lines, box-graphics, and step-reviews. If these five skills meet your needs fully, go no further in this chapter. These skills are not very complex. However, carefully and consistently used, they may make you a QLearner and rescue you from the pit of mislearning. If you want to design your own learning programs to fit you, your situation, and your learning content, read on in this chapter.

BRAINWORK

> "Our research indicated that student aptitude was the most influential of the six broad categories of influences. Among the categories of student aptitude, a student's metacognition processing--that is a student's capacity to plan, monitor, and, if necessary, re-place learning strategies--had the most powerful effect on his or her learning" (Wang, Haertel, Walberg 1993, 75).

You are unique in many ways. You are the only person on earth that has your kind of brain, fingerprints, and genes. As stated earlier, it has been suggested that about half of your 100,000 or so genes design and program your brain (Cowley 1993, 45). You will want to adapt the general QLearn Model to your circumstances and needs. Usually, you cannot just follow a pattern like a cookbook and end up with QLearn. If possible, design your learning skills to meet your personal needs.

You might find that you are attempting to learn materials that require many learning skills. In that case, you can choose QL8 or QL12. You still start with QL5 but you just add a few more needed learning-skill modules. And you may use QL5 for one area and QL12 for another. These skills become the tools in your toolkit of learning.

For some learning, you will need all available learning skills, and possibly some more. This book presents just 16 learning skills, and then only one mode for each module. Obviously, there are many more and some are listed at the end of Part III. Since modules 1.1 and 1.2 are exclusive, only one is used. Thus we have QL15. Table 29 presents four QLearn plans, QL5, QL8, QL12, and QL15.

Table 29. QLearn Skill Plans QL5 - QL15

QL5	QL8	QL12	QL15
1. FOCUS ON OBJECTIVES			
1.1 A-B Objectives	1.1 A-B Objectives	1.2 L-O Objectives	1.2 L-O Objectives
2. UTILIZE QLEARN RESOURCES			
2.1 Book-Probes	2.1 Book-Probes	2.1 Book-Probes	2.1 Book-Probes
		2.2 AV-Quests	2.2 AV-Quests
			2.3 Computer-Search
3. PARTICIPATE IN MICRO-LEARNING ACTIVITIES			
3.1 Mark-Lines	3.1 Mark-Lines	3.1 Mark-Lines	3.1 Mark-Lines
	3.2 System-Questions	3.2 System-Questions	3.2 System-Question
		3.3 T-Notes	3.3 T-Notes
			3.4 Memory-Mansions
4. CONTRIBUTE TO MACRO-LEARNING PROJECTS			
4.1 Box-Graphics	4.1 Box-Graphics	4.1 Box-Graphics	4.1 Box-Graphics
	4.2 Case-Problems	4.2 Case-Problems	4.2 Case-Problems
		4.3 Team-Tasks	4.3 Team-Tasks
			4.4 Theme-Reports
5. CHECK (AND MEASURE) YOUR LEARNING OUTCOMES			
5.1 Step-Reviews	5.1 Step-Reviews	5.1 Step-Reviews	5.1 Step-Reviews
	5.2 Test-Sets	5.2 Test-Sets	5.2 Test-Sets
		5.3 File-Portfolios	5.3 File-Portfolios

On the following Tables 30 to 34, I present examples of the use of all the learning skills. I have organized the examples in a way that all skills are used and that they all fit together. But first I want to place all the 16 learning skills, with their key-words, on one page. Thus, with one look, you can see what QLearn, in its most complete outline, is all about. While I present here 16 learning-skill modules, only 15 learning skill modules are commonly used throughout this book. Every learning situation uses only one type of objective, either a A-B objective, or a L-O objective. Since L-O objectives are just more complete forms of A-B objectives, using both types makes no sense. Thus there are only 15 QLearn skill modules. Now remember, you may be able to get along with QL5. Here is another way to present the outline of this book.

The first example of QL5 skills was presented in the introduction to Part II and dealt with Language/Philosophy. The other QL5 skills are presented in the following pages. Robinson (1993, 143) also categorized most school subjects into four types. His Type I compares somewhat to my broad social science category and mainly intends to inform. Robinson's Type II category relates to language/philosophy and interprets information. His Type III is similar to the science/mathematics category and deals with problem-solving. Robinson's last category is close to practical and fine arts and deals with creativity.

Table 30. QLearn Skill Plan Outlines (QL5 - QL5.3)

QL5	QL5.1	QL5.2	QL5.3
1. FOCUS ON OBJECTIVES			
1.1	1.1	1.2	1.2
A-B Objectives	A-B Objectives	L-O Objectives	L-O Objective
Motivation	Motivation	Date/Person/C	Date/Person/C
Attitude-Beh.	Attitude-Beh.	Criterion	Criterion
Action	Action	Standards	Standards
Outcome	Outcome	Outcome	Outcome
2. UTILIZE QLEARN RESOURCES			
2.1	2.1	2.2	2.3
Book-Probes	Book-Probes	AV-Quests	Computer-Search
Categories	Categories	Listening	Systems
References	References	Reading AVs	Processing
Outline	Outline	Making AVs	Programs
Documentation	Documentation	Visualizing	Interactives
3. PARTICIPATE IN MICRO-LEARNING ACTIVITIES			
3.1	3.2	3.3	3.4
Mark-Lines	System-Question	T-Notes	Memory-Mansions
Underlining	Targeting	Main Points	Indexing
Questioning	Formulating	Supports	Memory-Helps
Symbols	Answering	Signals	Emotionals
Comments	Responding	Key Words	Retrieving
4. CONTRIBUTING TO MACRO-LEARNING PROJECTS			
4.1	4.2	4.3	4.4
Box-Graphics	Case-Problems	Team-Tasks	Theme-Reports
Selecting boxes	Definition	Selection	Type
Connecting	Options	Relationships	Planning
Editing	Descriptions	Designing	Writing
Explaining	Decision	Team-Skills	Improving
5. CHECK (AND MEASURE) YOUR LEARNING OUTCOMES			
5.1	5.1	5.2	5.3
Step-Reviews	Step-Reviews	Test-Sets	File-Portfolios
Checklist	Checklist	Preparing	Objectives
Timing	Timing	Test-Skill	Materials
Summaries	Summaries	Choices	Adding
Rehearsals	Rehearsals	Organization	Discarding

Table 31. Example of QL5.1 Skill Plan (Science/ Mathematics)

1. OBJECTIVES	OBJECTIVES	BOOK-PROBES
1.1 A-B Objectives Motivation Attitude-Beh. Action Outcomes	1. To explain Healthy Choices 2. To practice healthy patterns	1. Check library catalog 2. Select 3 books 3. Make T-Notes
2. RESOURCES 2.1 Book-Probes Categories References Outlines Documentation	MICRO-LEARNING OF HEALTHY CHOICES (HC) 1. Exercise moderately or vigorously for about one-half hour at least three times a week. 2. Eat a variety of wholesome, unrefined foods to maintain ideal body weight. 3. Manage stress through lifestyle changes and situational approaches. 4. Enjoy a clear head and clean lungs by abstaining from alcohol, tobacco, and other unnecessary drugs. (Klimes 1993, 80)	
3. MICRO-LEARN 3.2 System-Question Targeting Formulating Answering Responding	SYSTEM-QUESTIONS (Micro-learning) Q1. What observations would you make about HC? Q2. How do you now implement some of HC? Q3. What do you think is difficult about HC? Q4. In what way would you implement all HC? Q5. What problems do the HC prevent? Q6. What other HC are important to you?	
4. MACRO-LEARN 4.2 Case-Problems Definition Options Descriptions Decision	CASE-PROBLEM (Macro-learning) PROBLEM: How to maintain ideal body weight? Option 1: Eat less Description: + does not add unneeded calories - may not lose weight for long Option 2: Exercise more Description: + burn off excessive calories - requires much exercise Option 3: Take weight-loss pills Description: + may work - dangerous and possibly harmful	
5. LEARNING OUTCOMES 5.1 Step-Reviews Checklist Timing Summaries Rehearsals	Option 4: Eat more low-calorie foods, and fewer high-calorie foods. Description: + quite easy - hard to give up tasty high-calorie foods. Decision: Options 2 and 4 combined. STEP-REVIEWS Daily food calendar and record, weekly totals Daily record of miles/time walked, exercise heart-rate, weekly distance walked (goal: 15 km)	

Table 32. Example of QL5.2 Skill Plan (Practical/ Fine Arts)

1. OBJECTIVES 1.2 L-O Objectives Date/Person/C Criterion Standards Outcome	OBJECTIVE: 1. By June 1, 99, J.K., given needed supplies, will make a poster on QLearn,...	AV-QUEST: Heinich, Robert, Michael Molenda, James D. Russell. 1985. Instructional Media. 2nd ed. New York: John Wiley and Sons.
2. RESOURCES 2.2 AV-Quests Listening Reading AVs Making AVs Visualizing	AV-QUEST: THE A-B-C-L OF DESIGNING LITERATE VISUALS. "The basic design considerations to keep in mind in planning your rough layout are summarized in the following mnemonic device: Use.............. A-Arrangement, B-Balance, and C-Colors Arrange........... L-Lettering." ARRANGEMENT: "The visual and verbal elements of the layout should be arranged in a pattern that captures the viewer's attention and directs it toward the relevant details. The manipulation of line, space, and mass are the designer's primary tools. Elements arranged along any of the one-third dividing lines take on a liveliness..."	
3. MICRO-LEARN 3.3 T-Notes Main Points Supports Signals Key Words	BALANCE: "A psychological sense of equilibrium or balance is achieved when the 'weight' of the elements in the display is equally distributed on each side of the axis-either horizontally, vertically, or both." COLOR: "Artists have long appreciated that blue, green and violet are perceived as 'cool' (receding from viewer) while red and orange are 'hot' (approaching the viewer)." LETTERING: "A common rule of thumb suggests that the lettering be 1/4-inch for each 8 feet of viewer distance" (pp. 75-83).	
4. MACRO-LEARN 4.3 Team-Tasks Selecting Relationships Designing Team-Skills	TEAM-TASKS: 1. Select 2 friends to work with. Homogeneous, with shared leadership. 2. Build a learning-team relationship. Communicate openly, accept differences. 3. Design a poster on QLearn. Discuss the application of A-B-C-L. 4. Assign collection of materials, and work.	
5. LEARNING OUTCOMES. 5.2 Test-Sets Preparing Test-Skills Choices Organization	TEST-SETS: Review the text's main points and the poster. Read/reread/reread the instructions. Essay test: main points/supporting points.	

Table 33. Example of QL5.3 Skill Plan (Social Sciences)

1. OBJECTIVES	OBJECTIVE:	COMPUTER-SEARCH:
1.2 L-O Objectives Date/Person/C Criterion Standard Outcome	1. By Jan 1, 98, B.J, given needed resources, will write a 20-page report on the G.A, 90%+ acceptable to the teacher.	1. Search: Lincoln, A. 2. Gettysburg Address 3. Civil War (Willis 1992, 261)
2. RESOURCES 2.3 Computer-Search Systems W.Process Programs Interactives 3. MICRO-LEARN 3.4 Memory-Mansions Indexing Memory-Helps Emotionals Retrieving	MICRO-LEARNING OF GETTYSBURG ADDRESS (G.A.): ...The world will little note nor long remember what was said here, but it can never forget what they did here. It is for us, the living, rather, to be dedicated to the unfinished work that they who fought here have thus so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us -- that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion, that we here highly resolve that these dead shall not have died in vain; that this nation, under God, shall have a new birth of freedom; and that government of the people, by the people, for the people, shall not perish from the earth. (A. Lincoln)	
4. MACRO-LEARN 4.4 Theme-Reports Type Planning Writing Improving	MEMORY-MANSIONS: 1. Divide the above text into 3 parts. 2. In each part, underline 6 key-words. 3. Devise memory-helps. 4. Review daily for 2 weeks, and then weekly for 2 months. THEME-REPORT: 1. Ask a question about the G.A, develop topic 2. Research the topic, collect sources 3. Outline, write, edit, and rewrite.	
5. LEARNING OUTCOMES. 5.3 File-Portfolios Objectives Materials Adding Discarding	FILE-PORTFOLIO OF____________. 1. Objective: Evidence of learning 2. Materials Paper on G.A. Others 3. Addition Criteria Reliability Relevance Cohesion Beauty	

Table 34. QL6 Pattern for a Passage on the Philosophy of Life.

1. OBJECTIVES 1.1 A-B Objectives Attitude Behavior Action Outcome	A-B OBJECTIVES of____________________ A: To appreciate the beauty and wisdom of the passage, or____________________ B: To practice the learned outcomes in everyday life __________for__months. or________________________________
2. RESOURCES 2.1 Book-probes Categories References Outlines Documentation	BOOK-PROBES: Select the category and books. Use appropriate reference books. Outline needed content. Document the sources.
3. MICRO-LEARNING 3.1 Mark-lines Underlining Questioning Symbols Comments	MARK-LINES: Underline key-words in the passage. Write questions in the margin. Add symbols at the side. Make comments at the end of the passage.
3.2 System-questions Selecting Formulating Answering Responding	SYSTEM-QUESTIONS: 1. Who wrote it? To whom? Through whom? 2. When was it written? Started? Ended? 3. Where was it written? To? From? 4. What is the main topic/question? What do the key words mean? Define. What do the main sentences mean? 5. Why was it written? Give reasons. Why is it important? Why is it useful to you? 6. How is it applicable in my life? How can I follow the steps? How can learning outcomes be measured?
4. MACRO-LEARNING 4.1 Box-graphics Boxes Connections Editing Explaining	BOX-GRAPHICS: Draw, edit, and explain ___ box-graphics
5. LEARNING RESULTS 5.1 Step-reviews Checklists Timing Summaries Rehearsals	STEP-REVIEWS: Check if box-graphics meet the objectives. Check if mark-lines were incorporated in system-questions and box-graphics. List key passages. If possible, memorize key passages List key sentences List key words Check key word definitions Check explanations of the box-graphics Reread all notes.

Since you are still with me, I have to tell you that I really did not want to present the simple QL5-QL12 approaches. To me that is too mechanical. But many people like it and do not want to be confused with too many choices. Of course, if you selected QL15, this next page will not interest you too much. You can skip it.

But for those of you who are still there, I want to present a more sophisticated approach in Table 35. You can rate each module on a 5-point scale according to the three criteria. Then you add the numbers on the following sheet and come up with your personally designed pattern. Neat? Try it.

In Table 36, I present a list of 105 learning modules. These are just some of the more than 300 learning modules that may be in common use. A learning skill module is a pattern that may be adapted to many learning situations. Up to now, I have categorized the skills by their functions. They may also be divided as those dealing primarily with symbols and others dealing mainly with production.

Table 35. Designed QLearn Skill Plan.

Directions: Evaluate each module on a 5-point scale, with 5 as the highest value.

	Best for Person's Intelligence	Most Effective in Situation	Least Time and Cost	Total
1. OBJECTIVES				
1.1 A-B Objectives	___	___	___	___
1.2 L-O Objectives	___	___	___	___
2. QLEARN RESOURCES				
2.1 Book-Probes	___	___	___	___
2.2 AV-Quests	___	___	___	___
2.3 Computer-Searches	___	___	___	___
TOTAL	___	___	___	___
3. MICRO-LEARNING				
3.1 Mark-Lines	___	___	___	___
3.2 System-Questions	___	___	___	___
3.3 T-Notes	___	___	___	___
3.4 Memory-Mansions	___	___	___	___
TOTAL	___	___	___	___
4. MACRO-LEARNING				
4.1 Box-Graphics	___	___	___	___
4.2 Case-Problems	___	___	___	___
4.3 Team-Tasks	___	___	___	___
4.4 Theme-Reports	___	___	___	___
TOTAL	___	___	___	___
5. LEARNING OUTCOMES				
5.1 Step-Reviews	___	___	___	___
5.2 Test-Sets	___	___	___	___
5.3 File-Portfolios	___	___	___	___
TOTAL	___	___	___	___

DESIGNED QLs

QL5+
Highest in each section: 1___, 2_____, 3_____, 4_____, 5_____

QL8+
Highest in sections 1-5, and 2nd highest in sections 3,4,5: 6___, 7_____, 8_____

QL12+
QL8+ and the 2nd highest in sections 2,5 and the 3rd highest in sections 3 and 4: 9___, 10_____, 11_____, 12_____

Table 36. 105 Modules of Learning Skills

LEARNING. APPROACHES	LEARNING AREAS	QL15 MODULES	ADDITIONAL 90 MODULES
Learning by using symbols	Listening and Speaking	System-questions	Tape-recodings, television, language laboratories, lectures, discussions.
	Reading	Mark-lines T-notes Step-review	Speed-reading, vocabulary improvement, examples, translation into stanzas.
	Writing	Objectives Memory-mansions Theme-reports Test-sets	Letter, poetry, newspaper, script, diary, journal, acrostic list, memo, outline, parable, paraphrase, reaction sheet, personalization.
	Music		Singing, listening, instrument, bells, guitar, song writing, song-study, jingle, song paraphrase, song rewrite, action-songs.
Learning by producing	Art	AV-quests Box-graphics	Painting, mural, collage, paper tearing, cut paper, block printing, chalk, clay, mobiles, stitching, blueprinting papier-mache, posters, mosaic, montage, banner, badge, doodles, silhouette,
	Simulated production	Case-problem, Team-task File-portfolio	Role-playing, pantomime, choral reading, dialogue, drama, role reversal, skit, socio-drama, story-telling, discussion interview, symposium, in-basket QA, brainstorming, forum, model, game, puzzle, laboratory, exercises, discoveries, debate, programmed learning, simulations, teaching machines.
	Authentic production	Book-probe Computer-search	Dance, aerobics, field-trip, service project, display, collection, demonstration, survey, sports, celebrations, continuing education.

Since this book is also used as a textbook for learning skills, I am presenting in Table 37 a scope-and-sequence chart to help you plan your time-utilization.

Table 37. QLearn Scope and Sequence

SCOPE SEQUENCE	PART I WHAT IS QLearn?	PART II HOW CAN I USE QLearn SKILLS?	PART III Part IV
1st week*	1-3	0	0
2nd week	0	1, 2	0
3rd week	0	3, 4	0
4th week	0	5	Part III
5th week	0	0	Part IV

* A two-credit course of six hours weekly or 30 hours. The course may also be presented in an intensive mode in five days of six hours of classes each. Pre-class and post-class reading and project time is suggested.

* Each period may also stand for 3 weeks, thus the 1st three-week period, 2nd three-week period, etc. In that case, the course becomes a three-credit course of 45 class-hours.

LEARNING CHALLENGES

1. Based on your lesson, develop a five-part study sheet similar to QL5.1, QL5.2, or QL5.3.

2. Based on another one of your lessons, design and field-test a study sheet according to Table 35.

PART IV. HOW CAN YOU AVOID MISLEARNING?

MISLEARNING AND QLearn

I had a hard time deciding where to place this section. In a way, it belongs in the front, so that you first avoid mislearning. But then you did not know what mislearning was. So I placed it at the end to help you shed all of your bad habits and free you to QLearn. I could have just written a book on how to avoid mislearning. All you have to do is to give up all mislearning and immerse yourself with high skills in challenging learning. It is as simple as that. Our visits were intended to help you develop these high skills and to see the challenges. It is up to you to change from mislearning to QLearn.

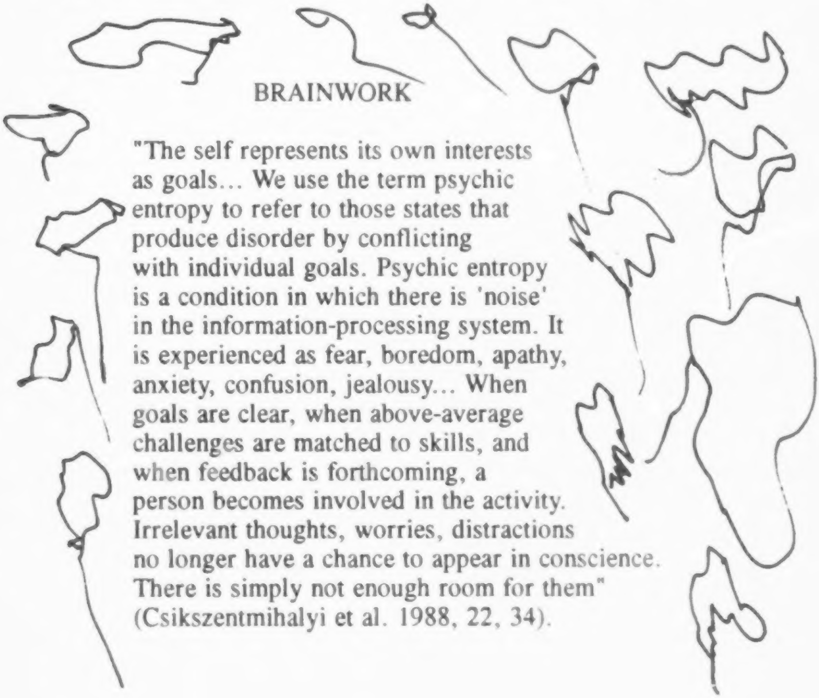
Most of the learning in schools, universities, homes and businesses has elements and large portions of mislearning. One author even concluded that "most schools are doing a terrible job" (Robinson 1993, 270). Mislearning is any learning where the learner does not master 60% or more of the planned skills or attitudes. Passing a test with a score of 80% does not mean that you have acquired the intended skill. It means that the teacher selected such questions and problems that you could answer quite well. In real life, your skills may be inadequate. In many countries, mislearning is most pronounced on the secondary and undergraduate college levels, and less so on the elementary and graduate school levels. That may be, in part, a result of the smaller classes on those levels.

You might be surprised what distracts you from QLearn, and therefore leads you to mislearning. I have learned to spot distractions. In the past, they have robbed me of the energy I needed to learn really well. I cannot afford that time and effort. By avoiding distractions, I improve my learning. Now I learn smarter, not harder. Come, join me.

In this last part, I will present first how to recognize and avoid distractions. Then I will help you build your QLearn skills into a life-long structure..

1. REJECT DISTRACTIONS.

I kill all the distractions, and then get to work. I put a "Do Not Disturb" sign on my door and immerse myself in the task. And if I am excited about the outcome, nothing can stop me. Not even the temptation of chocolate cake. I have work to do, for learning is work.



BRAINWORK

"The self represents its own interests as goals... We use the term psychic entropy to refer to those states that produce disorder by conflicting with individual goals. Psychic entropy is a condition in which there is 'noise' in the information-processing system. It is experienced as fear, boredom, apathy, anxiety, confusion, jealousy... When goals are clear, when above-average challenges are matched to skills, and when feedback is forthcoming, a person becomes involved in the activity. Irrelevant thoughts, worries, distractions no longer have a chance to appear in conscience. There is simply not enough room for them" (Csikszentmihalyi et al. 1988, 22, 34).

In QLearn you try to prevent psychic entropy, irrelevant fact, worries and distractions that, given a chance, would lead to mislearning. Thus by avoiding mislearning you are free to QLearn. Remember, QLearn is not easier; it is harder. QLearn is not faster; it takes more time. QLearn is not simpler; but it produces good results.

1.1 FOCUS AWAY FROM DISTRACTIONS.

Identify distractions in classes and tests. In a way, when you QLearn you do the opposite from what you do when you mislearn. QLearners focus on objectives, mislearners on distractions. Outside distractions may take many forms, such as interruptions, noises, messes, lost things, and poor notes.

Forgo non-learning actions while learning. You have just so much attention power. If you use it for other purposes, you will mislearn. Do one thing at a time. When it is time for learning, do it with full concentration and your whole heart. Then later, you can play football with all your being. When learning at home, face the wall, put up a keep-out sign, and study in a regular place.

Reject passivity, scattered efforts and unnecessary burdens. I do not know of a good passive way of learning. Things will not just come to you by just sitting there. Listen with your ears, your mind, and your pen. See with your eyes, your mind and your pen. Your ears and eyes are like the computer keyboard, your brain like the processor, and your pen like the printer. The closer you keep on track, the more you will learn. There is no place for day-dreaming, rationalization, or irrelevant burdens. Learning is heavy enough on its own.

Foster an I-CAN attitude. The emotions have as great an influence on your learning as your thinking. If you think that you will fail and mislearn, you will fail and mislearn. If you cover each base, and participate actively in QLearn, you can do it. It is not easy. But it is possible. And bear desired learning outcomes in mind. Maximize QLearn skills. Check if the objectives are being met.

1.2 SELECT APPROPRIATE DIFFICULTY.

If the lesson is too easy, enrich it with supplementary resources. One of the greatest contributors to mislearning is boredom. If things are too simple, or if you are going over a thing repeatedly, you get bored. And if you are bored, you mislearn. So find some extra things to enrich your learning. Make up a project just for fun. Just for yourself.

Otherwise, boredom will kill your other efforts.

If it is too difficult, seek remedial help. At times, you cannot learn because the material is too difficult. Then you get anxious and frustrated. You want to give up, and in some ways you do give up and close down. Then find help to get you over the hurdles. Sometimes extra time will do it, at other occasions the use of more QLearn skill modules is needed. Or find a friend or team-member who can help. The longer you wait, the further you fall behind. You will struggle and spin your wheels. You will go nowhere. That is mislearning.

Seek challenges and enjoy them. Some place between learning that is too easy and too hard is the challenge that motivates you to QLearn. Unless you see your learning as a precious opportunity, and value and enjoy it, you are mislearning.

1.3 PUT IN THE LEARNING EFFORT/TIME.

Use appropriate learning activities. In Part III, we outlined ways to design appropriate learning activities. Review those chapters. They can help you avoid mislearning.

Commit to the needed work. Decide that learning is work and that you might as well do it and enjoy it. The greater your commitment to the objectives, the more you will learn. Learning requires dedication.

Find appropriate helpers and resources. You may have been a mislearner because you lacked the needed resources. Do not skimp on books. It is foolish to invest much money in an education and then be afraid to buy and mark up a book. As you see the larger picture, you will make every effort to collect all needed resources for QLearn. If you rely fully on one textbook only, you may miss much.

Select a helpful environment. Adjust the light, the temperature, your whole environment. Do not let those little things hinder your learning. They may seem small, but they may make the difference between QLearn and mislearning.

Manage your total time. If you are a lark or an early-person, study in the morning. If you are an owl or a late-person, study much in the evening. Take five-minute breaks every half hour or hour. Alternate subjects to be studied so that you do not become weary.

1.4 FOSTER PHYSICAL/EMOTIONAL HEALTH.

Practice physical health. You may not get enough sleep, or food, or exercise. A balanced program of exercise, diet and sleep contributes positively to your brain-friendly learning. Even if you use all the QLearn skills and neglect your health, you will end up a mislearner sooner or later. If in a given situation you have a choice between too much and too little food intake, sparse intake is preferred for QLearn.

The Birmingham, Alabama, health department sponsors health counseling programs that, when needed, help people lose weight, quit smoking, manage stress, reduce their cholesterol, control their blood pressure, and prevent back injuries. "The payoff came quickly....By investing $3 million in health promotion, Birmingham officials figure, they saved $10.5 million over five years" (Cowley 1993, 45). Your investment in your health will contribute to your QLearn.

Guard your mental health. You learn with your brain, which houses both your intellect and your emotions. Actually, the two are interwoven. "The electrical power of the brain, promoted by mental activity, vitalizes the whole system, and thus is an invaluable aid in resisting disease" (White 1903, 197). Your mental health is as important as your physical health, your learning skills, and the content of your learning. Manage stress. Develop positive emotions, such as joy, thankfulness, peace. Find social support. Use music to mask sounds that may distract you from positive learning. Avoid excessive tiredness, unreasonable fears and drugs. Caffeine products may help you temporarily keep awake, but in the long run they are not brain-friendly.

Enjoy music. Rose and Lozanov advocate the use of baroque music from the period 1700-1750 to support learning. They suggest that string music by Handel, Bach, Vivaldi, Corelli, and Telemann "with a steady bass accompaniment to a specific beat of 60 beats per minute...

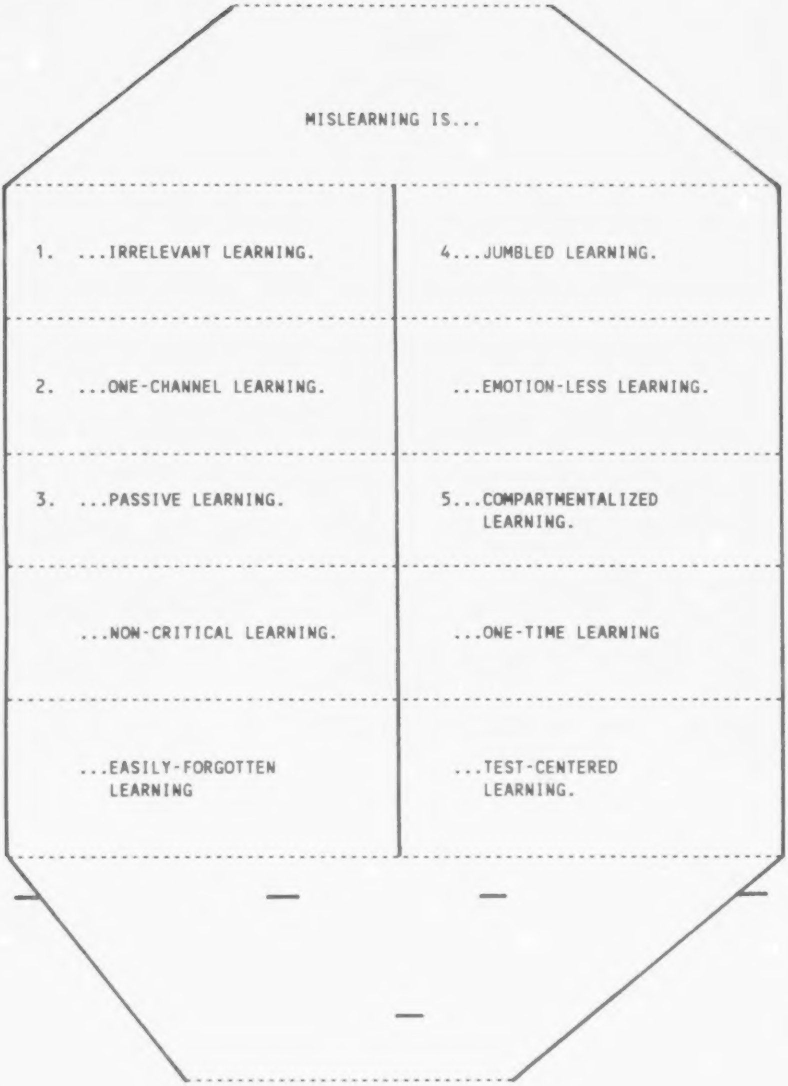
produces a sense of well-being and relaxed receptivity" (Rose 1985, 93-105). I often listen to Handel's Concerto Grosso No. 2 in B-flat major, Bach's Concerto in C minor 1060 for Violin and Oboe, and Vivaldi's Cello Concerto in E-minor, and enjoy them greatly as background music for learning. Whatever their possible effect on our brain waves, they are good music. Gordon Shaw of the University of California at Irvine was involved in a study that showed that Mozart's Sonata for Two Pianos in D Major "could actually increase your intelligence, at least temporary. Relaxation tapes or silence did not result in a change of the average scores" (Ramo 1993, 52).

Express emotions. Your emotional state in any given situation is either positive (+) or negative (-) and 1) unreasonable, 2) reasonable, or 3) reasonable with special support. Positive emotions such as satisfaction, forgiveness, and gladness support learning. Negative emotions include feeling miserable, helpless, sad, angry, or fearful. They hinder concentration. Much learning makes a limited impression on the mind. QLearn is helped by the positive emotional mix that is often produced in teamwork.

Brain-friendly learning systems like QLearn work with the brain, mislearning works against brain development. Most people do not think about their muscles when they pick up a pen. But the muscles help the fingers pick up the pen. Without them, you could not move. Athletes study, among other areas, the development and movement of their muscles in order to achieve maximum performance.

Most people also do not think about their brains when they learn. Just like athletes, we have a choice to go with the system or against it. In the beginning, QLearn may be harder than ordinary learning. But in the long run, it is one of the best systems of avoiding mislearning.

I have presented versions of the following chart in each part of this book. This time, in Table 21, I am presenting it to highlight the problems of mislearning.



MISLEARNING IS...

1. ...IRRELEVANT LEARNING.

2. ...ONE-CHANNEL LEARNING.

3. ...PASSIVE LEARNING.

...NON-CRITICAL LEARNING.

...EASILY-FORGOTTEN LEARNING

4...JUMBLED LEARNING.

...EMOTION-LESS LEARNING.

5...COMPARTMENTALIZED LEARNING.

...ONE-TIME LEARNING

...TEST-CENTERED LEARNING.

Fig. 21. A Summary of Mislearning

LEARNING CHALLENGES

Use this book as basis for the following:

1. List and describe in full sentences all your mislearning practices and habits.

2. In five-sentence paragraphs, plan and describe how you will turn each of the above into QLearn experiences.

2. KEEP BUILDING QLearn SKILLS.

Learning is a lifelong undertaking. Formal education in schools and universities may be limited to a few years, but learning goes on. Every month, I train myself in a few new skills. I participate every year in training programs that help me develop new understandings and competencies. Thus I keep building QLearn skills.

BRAINWORK

"If all my work, including this book, achieved no more than cause a shift to the self-image of 'I am a thinker,' I would be happy" (deBono 1985, 148). If you can also say, "I am a lifelong learner," I would be more than satisfied.

I will once more highlight the five main points of QLearn as an on-going learning system. Obviously, much more is involved in the development of learning skills than can be summarized in a few lines. There is a danger that you might get lost in the multiplicity of modules. Thus I present again the basics of QL5 as another way out of the maze:

* Clearly written objectives increase the possibility of quality learning outcomes.

* Appropriate learning resources make quality learning easier.

* Participative micro-learning activities help learners find the main point and supporting points in the information.

* Planned macro-learning projects provide opportunities for the application of quality learning.

* Regular learning feedback and measurements help maintain the quality of the learning outcomes.

2.1 LEARN FROM MANY DISCIPLINES.

As shown in Table 38, the study of QLearn as a lifelong endeavor has its roots in many disciplines. In the following table, the various disciplines are presented. You are encouraged to pursue the fields that interest you.

Table 38. QLearn-related disciplines

QLearn Modules	Disciplines
A-B Objectives	Education, management, values
L-O Objectives	Education, management, measurements
Book-probes	Library and information science
AV-quests	Instructional media, mass media
Computer-search	Computer and information science
Mark-lines	Study skills, organization
System-questions	Critical thinking, thinking skills
T-notes	Study skills, thinking skills
Memory-mansions	Mnemonics, poetry
Box-graphics	Graphic arts, computer graphics
Case-problems	Creative thinking, logic, law
Team-tasks	Group counseling, quality circles
Theme-reports	English language and composition
Step-reviews	Psychology of learning, management
Test-sets	Measurements, quality assurance
File-portfolios	Management, organization.

2.2 LEARN TO MANAGE WITH QLearn.

QLearn is not limited to training and school situations. QLearn may be used in the management and production of a great variety of products. To do justice to this area would require another book. But to bridge into this large field, I list 30 areas that are common management concerns. I use terms that are used mainly in educational organizations. As presented in Table 39, the following areas may be, in part, facilitated and improved, through QLearn.

Table 39. Management areas that can utilize QLearn

SYSTEM OR INSTITUTIONAL AFFAIRS	TRAINING OR ACADEMIC AFFAIRS
01. Mission and Objectives	21. Handbook or Bulletin
02. Plans	22. Curriculum Development
03. Policies	23. Course Schedules
04. Organization	24. Instructors and Staff
05. Licenses and Accreditation	25. Supervision
06. Boards and Councils	26. Evaluation
07. Relationships	27. Inservice and Training
08. Research	28. Records
09. Quality Control	29. Data-bases and Libraries
10. Legal Affairs	30. Media and Audiovisuals
WORKER AND LEARNER AFFAIRS	FINANCES AND BUSINESS AFFAIRS
31. Handbooks	41. Budget
32. Recruitment	42. Income
33. Counseling	43. Expenses
34. Personal Areas	44. Funding
35. Personnel Concerns	45. Facilities

2.3 DISTINGUISH QLearn FROM MISLEARNING.

It is time to present two more comparisons between QLearn and mislearning. I do this in Table 40 and Figure 22. Mislearning leaves no room for QLearn. So do not let mislearning in. Keep it out. Fill your mind always with QLearn and there will be no nitch for mislearning.

The following figure requires further comments. Mislearning at its worst consists primarily of a knowledgeable teacher telling the ignorant student what to remember. The student sits there and is supposed to take it all in. Later, when required, the student is expected to reproduce what the teacher said. Mislearning is mainly unidirectional going from the teacher to the student. The learning resources, if any, are not so important, because the central knowledge comes from the teacher's head. Audiovisual lectures with discussions may be an effective means of instruction to raise awareness. But steady doses of monologue lectures that have been poorly designed lead to mislearning.

In QLearn, you acquire and demonstrate learning-to-learn skills in addition to content competencies. You interact heavily with the learning resources that include the materials to be learned (Freiberg and Driscoll 1992, 175-199). QLearn resources, if possible, should be especially designed and prepared to facilitate QLearning. With these resources as aids, you can learn much by yourself. The teacher becomes the helper, the guide by the side. Because you have the learning skills, you can continue learning for a life-time. Happy learning!

Table 40. Comparison of Mislearning and QLearn

	MISLEARNING	QUALITY LEARNING
Learning Objectives	To change the attitude of the learners. (Learning of skills is often attempted but seldom attained.)	To change the 1. attitude 2. behavior 3. skill level of the learners.
Learning Resources	Mainly 1 textbook per student per class.	A wide variety of 1. books (references, library books) 2. audiovisuals 3. computer programs and searches
Micro-learning Activities	Teachers think for the students. None/few questions are asked. Mainly passive listening to lectures.	Many questions and much discussion. Learners marking their books/notes. Learners actively learning to learn and think.
Macro-learning Activities	Learning specific facts useful in specific situations. Learning alone in an isolated way.	Learning to see the larger picture, that may be adapted to many situations. Learners manage their own learning. Learning in class (30) teams (6), pairs (2)
Measurement of Learning	Evaluated mainly by mid-term and final tests.	Evaluated by 1. tests 2. projects/journals 3. portfolios Learners continue learning for life.

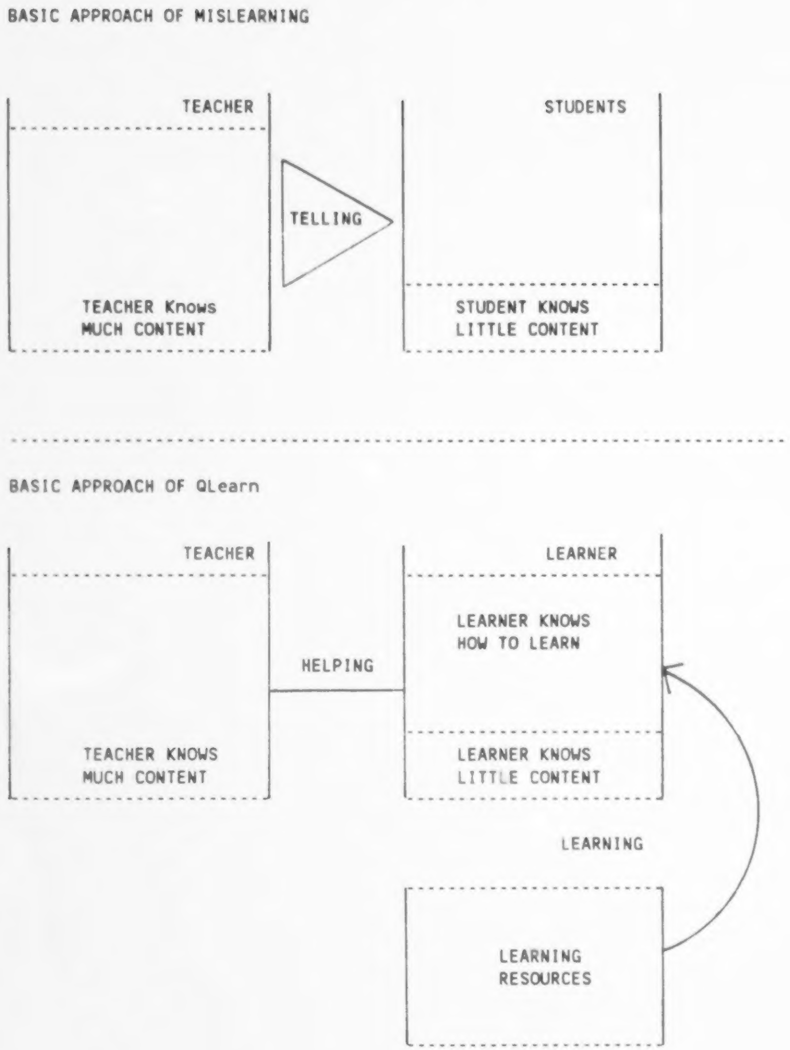

BASIC APPROACH OF MISLEARNING
TEACHER
TELLING
STUDENTS
TEACHER Knows MUCH CONTENT
STUDENT KNOWS LITTLE CONTENT
BASIC APPROACH OF QLearn
TEACHER
HELPING
LEARNER
LEARNER KNOWS HOW TO LEARN
TEACHER KNOWS MUCH CONTENT
LEARNER KNOWS LITTLE CONTENT
LEARNING
LEARNING RESOURCES

Fig. 22. Differences in QLearn and Mislearn Approaches

2.4 USE YOUR RIGHTS AS LEARNERS.

Another way to look at QLearn is from the perspective of Learner's Bill of Rights or Learner's Bill of Responsibilities (Reissman 1993, 86). Individuals or organizations that offer me learning should provide the very basics to assist me in my learning. I have certain privileges and responsibilities. I, as a learner or trainee, have the right and responsibility:

1. to understand the objectives of what I am learning.
2. to use appropriate resources in my learning.
3. to participate actively in my learning.
4. to discover the extent to which my learning outcomes have reached the objectives.

LEARNING CHALLENGES

Use this book as a basis for the following:

1. List and describe in full sentences all your QLearning practices and habits.

2. In five-sentence paragraphs, plan and describe how you will expand each of the above QLearn experiences.

3. Describe how you will use the Learner's Bill of Rights in your personal learning program.

RECOMMENDED READING

Learning: Armstrong 1993, Caine and Caine 1991, Gross 1991, Robinson 1993.

Objectives: Gronlund 1970.

Resources: Heinich, Molenda and Russell 1985.

Micro-learning: Ellis 1991, Leeds 1987.

Macro-learning: Corey and Corey 1987.

Measurements: Sherman and Wildman 1982.

BIBLIOGRAPHY

Ackerman, S. 1992. Discovering the Brain. Washington: National Academy Press.

Adler, Jerry. 1993. Heredity. They'll be the Same, But Different. Newsweek 122 (8 November): 44.

American National Standard--Quality Management and Quality System Elements--Guidelines. ANSI/ASQC Q94-1987. Milwaukee, WI: American Society for Quality Control.

Armstrong, Thomas. 1993. 7 Kinds of Smarts. New York: Penguin Books USA, Inc.

Baker, M. O. 1989. What Would You Do? Pacific Grove, CA: Midwest Publications.

Begley, Sharon. 1993a. The Puzzle of Genius. Newsweek. 122 (28 June): 34-41.

Begley, Sharon. 1993b. Doin' What Doesn't Come Naturally. Newsweek. 122 (29 November): 22.

Berklak, Harold, F. M. Newmann, E. Adams, D. A. Archbaid, T. Burgess, J. Raven, and T. A. Romberg. 1992. Toward a New Science of Educational Testing and Assessment. Albany, NY: State University of New York.

Biemer, Linda. 1993. Authentic Assessment. Educational Leadership. 50 (May): 81-82.

Block, Burel, and M. V. A. Khan. 1992. Quality Curriculum for the Brain. Education. 113:2, 245.

Bloom, B. S. 1956. Taxonomy of Educational Objectives. New York: David McKay Company, Inc.

Borich, Gary D. 1988. Effective Teaching Methods. Columbus, OH: Merrill Publishing Company.

Buzan, Tony. 1989. Using Both Sides of Your Brain. 3rd ed. New York: Plume Book.

Caine, R. N. and G. Caine. 1991. Making Connections: Teaching and the Human Brain. Alexandria, VA: Association for Supervision and Curriculum Development.

Casse, Pierre. 1981. Training the Cross-cultural Mind. 2nd ed. Washington, DC: The Society for Intercultural Education, Training and Research.

Castner, K, L. Costella, and S. Hess. 1993. Moving from Seat-time to Mastery: One District's System. Educational Leadership. 51 (September) 45-50.

Churchland, P.S., and T. J. Sejnowski. 1993. The Computational Brain. Cambridge, MA: The MIT Press.

Corey, M.S. and Gerald Corey. 1987. Groups: Practice and Process. 3rd ed. Pacific Grove, CA: Brooks/Cole Publishing Company.

Costa A. L. 1989. Re-assessing Assessment. Educational Leadership. 46: (April) 2.

Cowley, G. 1993. A View from the Womb. Newsweek. 122 (8 November): 45.

Csikszentmihalyi, Mihaly, and I. S. Csikszentmihalyi. 1988. Optimal Experiences: Psychological Studies of Flow in Consciousness. New York: Cambridge University Press.

Csikszentmihalyi, Mihaly. 1990. Flow, the Psychology of Optimal Experience. New York: Harper Perennial.

Davidson, Neil, and T. Worsham. 1992. Enhanced Thinking Through Cooperative Learning. New York: Teachers College Press.

deBono, Edward. 1985. deBono's Thinking Course. New York: Facts on File Publications.

DePorter, Bobbi. 1992. Quantum Learning. New York: Dell Publishing.

Dewey, John. 1963. Democracy and Education. Selected Readings in the Philosophy of Education. Joe Park, ed. New York: Macmillan Company.

Dishon Dee, and P. W. O'Leary. 1984. A Guidebook for Cooperative Learning: A Technique for Creating More Effective Schools. Holmes Beach, CA: Learning Publications, Inc.

Dole, Denis P. 1992. The Challenge, the Opportunity. Phi Delta Kappan (March).

Edelman G. 1992. Bright Air, Brillian Fire: On the Matter of the Mind. New York: Basic Books.

Ellis, David B. 1991 Becoming a Master Student. 6th ed. Rapid City, SD: College Survival, Inc.

Freed, M. N. 1989. The Educator's Desk Reference. New York: American Council on Education and Macmillan Publishing Co.

Freiberg, H. Jerome, and Amy Driscoll. 1992. Universal Teaching Strategies. Boston, MA: Allyn and Bacon.

Gagne, Robert M. and Marcy P. Driscoll. 1988. Essential Learning for Instruction. 2nd ed. Englewood Cliffs, NJ: Prentice Hall.

Gallup, George. 1947. The Quintamensional Plan of Question Design. Public Opinion Quarterly, (Fall).

Gardner, Howard. 1983. Frames of Mind. New York: Basic Books.

Gronlund, Norman E. 1970. Stating Behavioral Objectives for Classroom Instruction. New York: The Macmillan Co.

Gross, Ronald. 1991. Peak Learning. Los Angeles, CA: Jeremy P. Tharcher, Inc.

Heinich, R., M. Molenda, and J. D. Russell. 1985. Instructional Media and New Technologies of Instruction. 2nd. ed. New York: John Wiley and Sons.

Henricks, Melissa. 1993. I Forgot. Johns Hopkins Magazine. 45 (September): 29-34.

Johnson, W. David, R. T. Johnson, and E.J. Holubec. 1990. Circles of Learning. 3rd ed. Edina, Minnesota: Interaction Book Company.

Kagan, Spencer. 1992. Cooperative Learning. San Juan Capistrano, CA: Resources for Teachers, Inc.

Keefe, James W., ed. 1988. Profiling and Utilizing Learning Styles. Reston, VA: National Association of Secondary School Principals.

Klimes, Rudolf E. 1990. Curriculum Basics. Orangevale, CA: Pacifica Institute.

Klimes, Rudolf E. 1991. Research It. Orangevale, CA: Pacifica Institute.

Klimes, Rudolf E. 1993. Quality Learning. Orangevale, CA: Pacifica Institute.

Kohlberg, L. 1981. Essays on Moral Development. San Francisco, CA: Harper and Row.

Lazear, David. 1991. Seven Ways to Teach. Palatine, Il: Skylight Publications.

Langan, John. 1982. Reading and Study Skills. 2nd. ed. New York: MacGraw-Hill Book Co.

Leeds, Dorothy. 1987. Smart Questions, A New Strategy for Successful Managers. New York: Berkeley Books.

Lipman, Matthew. 1988. Critical Thinking- What Can it be? Educational Leadership. (September): 38-43.

Lium A.F. and Elsie Hancock. 1993. Complexity Physics: How the Real World Really Works. The Johns Hopkins Magazine. April.

Livermore, Beth. 1992. Build a Better Brain. Psychology Today. 25 (September/October): 40-47.

Luft J. and H. Ingham. 1955. The Johari Window. Proceedings of the Western Training Laboratory in Group Development. Los Angeles, CA: University of California, Extension Office.

Meyer. C., and S. Schuman. 1990. White Paper on Aggregating Portfolio Data. Rev. ed. Lake Oswego, OR: Northwest Evaluation Association.

Michalko, Michael, 1991. Thinkertoys. Berkley, CA: The Ten Speed Press.

Montague, Earl J. 1987. Fundamentals of Secondary Classroom Instruction. Columbus, OH: Merrill Publishing Company.

Newman F.M and G. G. Wehlage. 1993. Five Standards of Authentic Instruction. Educational Leadership. 50 (April): 8-12.

O'Neil, John. 1993. Using Technology to Support "Authentic" Learning. ASCD Update. 35 (October): 1-5.

Osherson, Daniel N. and Edward E. Smith. 1990. Thinking. Cambridge, MA: The MIT Press.

Palmer, R., C. Pope. 1984. Brain Train. New York: E. and F. N. Spon.

Pauk, Walter, 1984. How to Study in College. Boston: Houghton Miffin Co.

Paul, Richard. 1990. Critical Thinking. Rohnert Park, CA: Center for Critical Thinking and Moral Critique.

Paul, Richard. 1993. Why Critical Thinking? Critical Thinking. 1:2, 7.

Paulson, F. Leon, P. R. Paulson, and C. A. Meyer. 1991. What Makes a Portfolio a Portfolio? Educational Leadership. 48:5, 60-65.

Payne, Stanley L. 1951. The Art of Asking Questions. Princeton, NJ: Princeton University Press.

Perkins, David. 1993. Thinking-centered Learning. Educational Leadership. 51:4, 84-85.

Peters, T. J., and R. H. Waterman, Jr. 1982. In Search of Excellence. New York: Warner Books.

Piskurich, George M. 1993. Self-directed Learning. San Francisco: Jossey-Bass.

Ramo, J. C. 1993. Music Soothes the Savage Brain. Newsweek. CXXII:19, November.

Reissman, Rose. 1993. A Bill of Responsibilities. Educational LEADERSHIP. 51:4

Robinson, Adam. 1993. What Smart Students Know. New York: Crown Trade Paperbacks.

Rose, Colin. 1985. Accelerated Learning. New York: Dell Publishing.

Ross-Larson, Bruce. 1982. Edit Yourself. New York: W.W. Norton and Company.

Sharan, S. 1980. Coopperative Learning in Teams: Recent Methods and Effects on Achievement, Attitude, and Ethnic Relations. Review of Educational Reseach. 50, 241-272.

Sherman, Thomas M. and Terry M. Wildman. 1982. Proven Strategies for Successful Test Taking. Columbus, OH: Charles E. Merrill Publishing.

Slavin R. 1983. Cooperative Learning. New York: Longman.

Smith, Katy. 1993. Become the Guide by the Side. Educational Leardership. 51:2.

Springer, Sally P. and George Deutsch. 1989. Left Brain, Right Brain. 3rd ed. New York: W. H. Freeman and Company.

Sylwester, Robert. 1993. What the Biology of the Brain Tells Us About Learning. Educational Leadership. 51:4, 46-51.

Turabian, Kate L. 1987. A Manual for Writers of Term Papers, Theses, and Dissertations. 5th ed. Chicago: The University of Chicago Press.

Tyler, Ralph W. 1949. Basic Principles of Curriculum and Instruction. Chicago: The University of Chicago Press.

Wang, Margaret C., G. D. Haertel, and H. J. Walberg. 1993. What Helps Students Learn? Educational Leadership. 51:4, 74-79.

White, E. G. 1903. Education. Mountain View, CA: Pacific Press Publishing Association.

Willis, Gary. 1992. Lincoln at Gettysburg. New York: Simon and Schuster.

Yalom, Irvin D. 1985. The Theory and Practice of Group Psychotherapy. 3rd ed. New York: Basic Books, Inc., Publishers.

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1979-86, Director, American Health and Temperance Society, Washington, DC
1986-89, President, Samyuk College, Hong Kong
1989- , Professor and Department Chairman, Graduate School, Korean Sahmyook University, Seoul, Korea
1992- , Dean, School of Lifelong Learning, Korean Sahmyook University, Seoul, Korea

HONORS AND BIBLIOGRAPHICAL LISTINGS

1969, Outstanding Service Award, Minister of Education, Korea
1969, The Order of Civil Merit, DongBaeg Medal, President, Korea
Listed in 14 Who's Who type Bibliographical Dictionaries.

52 PUBLICATIONS

LANGUAGES

Czech, German, Latin, English, Russian, Greek, Malay, Korean, Japanese, Cantonese.

RESPONSE SHEET

To: Rudolf E. Klimes
LearnWell Resources
8941 Eadenoak, Orangevale, CA 95662

From: ______________________________

____

Date: ____________, 199__

I have rated the following aspects of the book Learn in Brain-friendly Ways on a 5-point scale, with 5 = best.

1. Usefulness in learning how to learn............1 2 3 4 5
2. Usefulness in learning how to produce..........1 2 3 4 5
3. Relevance of learning modules to learning......1 2 3 4 5
4. Quality of learning challenges.................1 2 3 4 5
5. Helpfulness of examples........................1 2 3 4 5

I especially appreciated the sections on ______________________________

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I suggest that you improve ______________________________

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I would like help with ______________________________

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I would like to use LearnWell Resources as follows:

Consulting ______________________________

Research ______________________________

Teaching/Training ______________________________

INDEX

Arts, 167
Attitude, 31-37
Audiovisuals, 52-56
Behavior, 31-37
Books, 47-51
Books on learning, 191
Brain, 19-23
Computers, 57-60
Graphics, 52-56, 91-96
Feedback, 115-136
Health, 180-182
Learning, cross-skills, 159
Learning, distractions, 177-183
Learning, patterns, 145-149
Learning, plans, 161-174
Learning, principles, 152-154
Learning, skills, 25-136
Learning, styles, 140-144
Intelligences, 140-149
Management, 155-156, 185
Markings, 64-68
Memorization, 80-88
Models of learning, 155-160
Mislearning, 177-183
Notes, 75-79
Relationships, 102-109
Reports, 110-114
Reviews, 117-124
Objectives, 29-44
Philosophy of Life, 72. 169
Problem-solving, 97-101
Portfolios, 132-136
Questioning, 69-74
QLearn, 5-24
Social Sciences, 168
Science/Mathematics, 166
Team-work, 102-109
Tests, 125-131
Thinking, 147-148
Time-management, 120

OUR BRAIN

focuses on **L-O OBJECTIVES** (pages 38-44).

OBJECTIVES

digests **BOOK-PROBES** (47-51)
analyzes **AUDIOVISUAL-QUESTS** (52-56)
follows **COMPUTER-SEARCHES** (57-60).

RESOURCES

is stimulated by **MARK-LINES** (64-68)
responds to **SYSTEM-QUESTIONS** (69-74),
develops through **T-NOTES** (75-79)
builds **MEMORY-MANSIONS** (80-88).

MICRO-LEARN

sees patterns in **BOX-GRAPHICS**(91-96),
grows with **CASE-PROBLEMS**(97-101)
relates to **TEAM-TASKS** (102-109)
thrives on **THEME-REPORTS**(110-114).

MACRO-LEARN

recalls **STEP-REVIEWS** (117-124)
persues **TEST-SETS** (125-131),
checks **FILE-PORTFOLIOS** (132-136)

CHECKS

benefits from **LEARNING-PLANS** (161-174)
can avoid **MISLEARNING** (177-184)
works best with **QLearn** (5-24, 137-160).

DESIGNS

BEST COPY AVAILABLE